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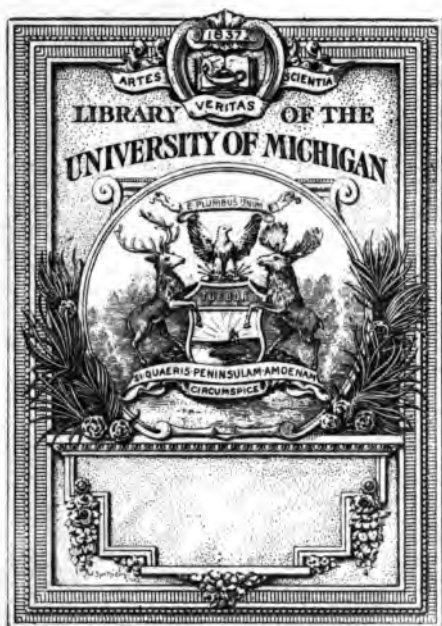
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# THE APPLICATIONS OF LOGIC





# THE APPLICATIONS OF LOGIC

A TEXT-BOOK  
FOR COLLEGE STUDENTS

*revised*  
BY  
A. T. ROBINSON, A. B.

ASSISTANT PROFESSOR OF ENGLISH AT THE MASSACHUSETTS  
INSTITUTE OF TECHNOLOGY

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## PREFACE

THIS book is based on ten years of class-room experience at the Massachusetts Institute of Technology, first with courses in formal logic, and latterly with an attempt to adapt some of the more fundamental theories of logic to the practical aim of instruction in the expression and the criticism of thought. Such an attempt has seemed not out of place with any class of students, but particularly important in connection with the work of a technical school, the graduates of which are likely to find in their professional life more use for an orderly structure of ideas than for the niceties of expression. The purpose of the book is to treat the whole subject of logic in so far as it bears on the practical work of thinking and of expressing thought; it is intended as a text-book of applied logic, suitable for use as an introduction to the subject with college classes. To some extent, therefore, the exercises proposed take the form of work in composition; but at the same time many of them are intended rather to cultivate the critical faculty by a direct exercise of the judgment. These, too, have a bearing on expression, but their immediate effect is designed to be the ordering and control of ideas within the mind itself. The exercises in composition may be classed as elementary or advanced according to the knowledge and experience of the pupils who undertake them. They might follow a course in the elements of rhetoric; but also there is no reason why they should not precede it.

The study of logic has been from its earliest appearance connected with the practice of thinking and of expressing

ideas; and in this connection has offered a body of vastly important truth. Yet its teachings in this direction are not even now easily available for class-room use. The best of the modern books are highly technical and argumentative; in many of the simpler class-manuals, on the other hand, the exercises are somewhat remote and formal. In view of this situation it appears that there may be room for a simplified treatment of the fundamental ideas of logic, presented in the practical setting of a series of exercises. Experience has shown that, in being thus taught, the student loses no essential theory. Later, if time permits, he may be given a course in the nice distinctions of the syllogism, and he will come to it with that intelligent appreciation which so abstract and technical a subject demands.

For the epistemology of the book no excuses are offered. It is, like every theory with a philosophic basis, susceptible of attack. The changes also that could be made in the exposition of it are numberless. These, however, as far as they now occur to me, would lie along the direction of greater accuracy of statement, and might serve merely to confuse the beginner. Again, since the book is not a formal treatise on logic, but deals mainly with the applications of logical principles, no apology need be made for the substitution in some cases of simpler distinctions, such as suited the main lines of thought of the book, for certain familiar terms. The treatment of the syllogism, for instance, is here made to depend upon substance rather than upon form. It therefore loses in relative importance and falls back into its natural position in the whole perspective of the subject.

A list of my general obligations would be clumsily long. I owe special thanks to a short treatise by Mary Boole, to the writings of Bradley and Alfred Sidgwick,

and above all to such parts of Hegel's Logic as I have been able to render into terms of my own thinking. It would be surprising and disconcerting if this book were found to contain any original thought, but I am not aware that the ideas in it have been anywhere put to quite the same use before.

Simplicity of statement has not been the chief aim in writing. In doubtful cases I have asked myself, not what some "average" student of such and such attainments would understand, but what seemed from my point of view most vital and inspiring. The reason for this attitude lay partly in my desire that, if possible, the book might interest not only students but teachers, who are, after all, the only thorough readers of text-books. Again, I am by no means convinced that the average pupil is so slow of apprehension as in discouraged moments we incline to think him. Yet, if students were ten times more dull than has ever been asserted of them, I should still not wish to spread among them the impression that education may be had without work. Each day they must be asked to attempt a little more than they can accomplish; each day their enthusiasm must be stimulated by the presentation of ideas which, because of their large bearing on the problems of life, seem worth a sustained effort to master.

I am indebted to Professor Arlo Bates for having twice read my manuscript, and to Professor Henry L. Seaver for valuable suggestions toward the development of the chapter on classifications and divisions.

A. T. ROBINSON

MASSACHUSETTS INSTITUTE  
OF TECHNOLOGY.



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# THE APPLICATIONS OF LOGIC

## INTRODUCTION

TEACHERS of composition fall, generally speaking, into two classes. The first is those of artistic temper, admirers of polite literature, who like to teach their pupils to imitate the masters of style, and who in their criticisms pay less attention to the meaning than to the form. The second class we may think of as hard-headed, practical men, who lay all the emphasis on clear and accurate statement. Text-books on composition appeal to both these points of view. They contain some directions for acquiring the gentle art of giving pleasure by the use of words, and some which relate to the plain business of saying what you mean. All these latter and purely practical matters are a part of logic, and will be found treated in an elementary way in the chapters which follow. This book, therefore, though not a treatise on how to write, covers some things to be found in manuals used with classes in composition. At the points where these occur, as in Part I for instance, the average student will feel himself most at home. He will recognize much that he has been taught, principles relating to the connection of statements within the paragraph, and to the outline of the theme.

At the same time, one who wishes to get to the bottom of the difficulty he experiences in saying what he means <sup>xx</sup> must go deeper than the ordinary text-books in composition. He must study the process of thought itself; he must learn to think of ideas as symbols for something which the mind cannot deal with in its original form; and he must become aware how much the symbols leave out of count.

This is the business of Part II. The material here will be considerably less familiar to the average reader, and will demand close attention. Some part of it has hitherto been treated as psychology, and some is a modification of ideas presented in the early chapters of text-books on logic. It is offered in this book as a continuous story, dealing first with the things we try to think about, then with the process of observing these things and giving them names, and finally with the necessary defects of this process. The cautions given in these chapters constitute the most valuable part of the book, for they relate to mistakes in thinking which we are constantly making and to which attention has seldom been called.

The principles laid down in Part III are touched upon in books on argumentation. The same ground is covered also, though in an entirely different way, in what is called inductive or formal logic. In this portion of the book the only unfamiliar material is likely to be the division of statements into two classes, and the way in which arguments are treated. The theory of all this, for one who has come through the preceding chapters, will be easy. To apply the theory, however, may be a more difficult matter. For the ordinary student, one of the hardest feats of logical analysis is to detect the essential statements of an argument and to see how they are connected.

In the three parts of this book, then, there is an attempt to answer three questions: first, How shall I arrange my statements as a whole, and what shall be the connections between them; second, What will my statements be worth as a representation of the things I talk about; and, third, Are my statements such as the majority of well-informed people would uphold? The first and third questions, it is evident, must frequently have been asked; daily experience forces them upon us whenever we attempt to

communicate thought. The second, from its very nature, is less likely to arise. Most of us do not even realize that thinking is the manipulation of symbols. It cannot, therefore, occur to us to study the relation between these symbols and what they represent.

The scope of all this material is evidently wider than the mere teaching of composition. One who is to study this book with any degree of patience, therefore, must give up the idea that all he wants is to learn to write. Skill in writing is a good thing; but it is a better thing, if what you have written is foolish, to be able to see that it is so and to discover the reason. Moreover, we spend only a small part of our time in writing and talking. During most of it we are being written and talked at, and frequently also by people with command of a charming style and much impressive phraseology. If we stand with mouths open, as William in the play stood before Touchstone, and drink in all that these people give us, it will be because our education has failed to develop our judgment. While a man is in this state, every new word that is added to his vocabulary is only one more means by which the designing may lead him astray. Such a condition will not satisfy the student of this book. He has joined the company of those who want truth, and will fight, if necessary, to get it. They fight confusion and disorder; they fight empty phrases; words that are mere symbols but pretend to be living things; general ideas that carry implications not justified by the facts they come from; and statements based on a few cases but advanced as though true of all. Such is the task of the logician. He is a student of composition, of course, but only because he is concerned with a broader subject of which it is one branch. His real interest is to study expression in its relation to what it pretends to express.

## PART I

### THE ORDER OF STATEMENTS

PART I is a study of the order in which one statement follows another in expression. Here we deal with two questions. The first is, How is a particular statement joined with what precedes and what follows? The answer appears to be that sometimes we think of things together because we found them so in nature. They have been associated in our minds, or they relate to events close together in time, or to objects naturally joined in space. These are the external connections of thought, suggested to us in the mere order in which mental material presents itself. Sometimes, again, the relations are those which the mind itself naturally uses in handling ideas, as when we compare one notion with another, or think of one statement as a reason for another. These are the mental connections of thought.

The names of all these methods of connection are, of course, sufficiently familiar. Few people, perhaps, could give a philosophic definition of a reason; but, once our attention is called to the matter, we can all tell with more or less ease when a sentence is supposed to prove some statement that precedes. All these matters, then, are well known to us as theory. Nevertheless we have probably not been trained to put them into practice in the criticism of prose. The first four chapters, therefore, do not attempt to define accurately the relations of thought, but merely remind the reader of their existence. Examples

are then furnished which give opportunity to test one's ability to apply the distinctions. The real purpose of these early pages is to give enough exercise in the analysis of logical connections so that the student may begin to form a logical habit of mind.

The second and really fundamental question in this part of the book is the following: How does a particular statement fit in with the whole, or, What good is it going to do if included? Here it is seen that statements cannot be set down in their original chaos, but must be arranged in order, to reach out toward some point definitely located in advance. A story is not a mere sequence of events; a description differs from a photograph; and it is not sufficient that each thought should be logically connected to the preceding, unless at the same time one kind of logical connection dominates the whole. Behind the whole operation there must be a purpose; and a logical order of statements may be spoken of as one which clearly shows the point of view of the thinker.

CHAPTER I explains the kind of analysis aimed at, and distinguishes it from literary and grammatical criticism. There follow certain exercises in note-taking and the drawing up of abstracts. These are included as the kind of work which most quickly tests a student's ability to strip prose to its logical skeleton.

CHAPTER II deals with the order in which mental material originally comes to us, and shows how this order must be changed. At this point the exercises are brief, for detailed study of narrative and description must be left to novelists and students of literature.

CHAPTERS III AND IV enumerate the logical relations and attempt to show how they govern, not only the connections between sentences, but also long sequences of thought. With the exercises which follow, the student

will be able for the first time in this book to test the degree of his logical power. The relations with which he is there asked to become familiar are those which form the subjects of the remaining chapters.

## CHAPTER I

### THE LOGICAL ANALYSIS OF PROSE

THOUGHTS come before us, as students of logic, only in the form of words. There may be a preliminary stage when they exist unclothed in language; but in this condition they are apparently but half formed in the mind, hanging here and there by a phrase. This state does not permit of criticism, and so logic may neglect it. Clear thinking, on the other hand, is for most people inseparable from some sort of expression, written, spoken, or mental, conveyed to others or in soliloquy. This is so true that a man often remains uncertain of his own meaning till he has put it into words. The wise foreman, when obliged to rebuke a troublesome member of his gang, sends him about some piece of work before he can answer. To check a rebellious word often saves making a rebel. For the same reason, the quickest way to master a hard problem in mathematics is usually to attempt to explain it to somebody else. Till a man can express his thought, he can hardly be said to know what he thinks.

Yet this expression does not always justly represent the real thought. The soul of the idea has taken on bodily form; and in the process it often assumes a rather mean disguise. Ideas come forth, except from well-trained minds, more or less at haphazard. With some thinkers the difficulty is to get started; they must allow for a preliminary period of talking or writing at random, merely that they may discover what they have to say.



Even when the start has been made, all sorts of dangers still threaten. The quick brain, working more rapidly than the pen, jumps to some new train of thought and leaves the writer stranded. Interesting ideas, remotely connected with his purpose, drag him out of his path. In blank moments, being able to think of nothing better, he despairingly sets down nonsense. Every writer has these trials; and because of them the reading of his first copy sometimes fills him with disgust. Now suppose him to be unaccustomed to the analysis of written statements. Then, in attempting to correct his copy, he sits helpless before his own manuscript, knowing that something is the matter, but unable to tell what. In the beginning, perhaps, his head was clear enough; but now he has dressed his thought in words, and effectually disguised it, even from himself. That the thought of other people is equally puzzling requires no proof. Ordinary talk, and even much that gets into print, fills the mind with a crowd of words, some of plain meaning, but many ill-chosen or vague, and some even intended to deceive. There are illustrations, digressions, meanings faintly hinted, and figures of speech. All these express ideas; but it often requires some keenness to determine which of the ideas are for the moment most important, and how they fit together to form a whole.

Thus there comes a time when the relative value of expressions — our own as well as those of others — must be judged. To be equal to this task, the thinker must first acquire the ability to analyze what he has written or what he reads. He must be capable at each step of detecting the leading thought, and of seeing its relation to what has preceded. Amid all the smoke and confusion, he must stand by the guns. This is the logical habit of mind; and to form it is the end of all logical

study. It is, in a familiar phrase, the ability to see the point.

This logical habit of mind cannot be exactly described in words, and no specific rules can be laid down for the guidance of one who wishes to acquire it. Habits of mind are not particular acts, but tendencies to act in particular ways. A definite rule can be given for the extraction of the square root, but not for acquiring a business sense or a taste for good literature. So with the logical habit. It is in reality a special way of thinking as you read; that is, a particular way of analyzing prose. It should grow up unconsciously in the student's mind as he reads this book and works with the exercises; but it cannot even begin in the conscious following of specific rules.

There are, however, some negative cautions; these relate chiefly to the necessity of removing other habits that interfere with the development of the logical sense. One difficulty in thinking logically is that we have been trained already to some other methods of analysis. The sense of grammar and sentence structure is the result of training in analysis; so too is all literary judgment of the good taste or aptness of expressions. These habits, as students of logic, we must for the moment lay aside. The grammatical form is not necessarily a key to the thought, and the literary form often serves merely to disguise it.

Our earliest attempts at analysis were in the grammar grades. They accustomed us to look upon written or printed matter as a collection of sentences. These sentences we think of as formed essentially in two parts: a subject, a statement of the thing you are talking of, and a predicate, a statement of the thing you mean to say. In logic too there are subjects and statements about them, but these seldom correspond to the grammatical subjects

and predicates. In a carefully drawn outline or brief of a passage, the successive statements and headings will represent closely the thought involved. For mathematical writing, again, a simple and direct presentation is possible. All mathematical conceptions have been defined in advance; they were created simple and clear. Ordinary prose, however, presents the student of logic with a problem quite different. When there are a thousand possible ways of viewing and developing one idea, and the writer is anxious to choose the most striking and novel, he does not go about his work directly. Under such conditions we need to study his meaning, not his accidental grammatical form.

In the same way we must not permit ourselves to be distracted by the details of expression. Most writing deals with real life; it attempts to represent experiences highly confusing and complex. For such a purpose the writer requires a mass of illustrations and tributary ideas, which the logical critic must grasp, not independently, but in their relation to something else. He strives first to see the thought in its simplest form, and knows that, if he can only discover the point, the other ideas will fall into place and stay there, like a regiment of soldiers that respect their colonel.

No charm in the expression of secondary ideas, and no attraction in their meaning, must interfere with their being taught thus to know their place. For an untrained thinker some unimportant illustration is often the most conspicuous statement on a page. It entertains him, it amuses him; and in his pleasure he forgets the point it was intended to convey. In intellectual processes there is, however, no valid reason why one should expect to be entertained or amused. If a lecturer tells a good story, if a speaker makes us laugh or cry, he has undoubtedly

added to our emotional experience; but it remains for a calmer moment to determine how far he may have furthered the real business of thought. The feelings, in short, are no reliable guide to the value of ideas. The critical mind is safest, at least in the beginning of its training, in that alert and unemotional attitude which we call "businesslike." It is on this account, perhaps, that one so often hears logic described as "cold."

The growth of this same businesslike habit of mind is perhaps the chief gain from a logical training. One grows accustomed to watch the drift, to pick out the essential and to cling to it. The formation of these habits increases the power of critical attention; and upon this power, both in the drawing-room and in the business office, all success depends. The mood of attention must necessarily be self-suppressed, and collected and brisk. These qualities a man may cultivate, so far as any formal exercise will cultivate them, if he does all his reading, and listens to such set speeches as come in his way, with the attitude of one who seeks to estimate ideas and to discover their relative values, that he may see the relations between them. Neglecting to do this, he will remain all his life a broken and empty vessel; no amount of pumping can fill him. Doing it, he will be by way of acquiring a trustworthy judgment and accumulating information which, since he has made it his own, will become part of his permanent mental equipment.

#### EXERCISES

**NOTE-TAKING.** For developing the power of seeing the point no training can be better adapted than a prolonged and carefully graded set of exercises in note-taking. With this work the student's training in logic should begin. He may first draw up abstracts from simple

passages in print, and then take notes, first from the slow reading of such passages, and then from lectures and addresses. This practice, also, should react favorably on the student's other courses. In view of these facts there follow certain suggestions for a brief course of exercises.

1. Compare the following selection with the outline which accompanies it. How far does the outline represent the essential thoughts, their connections, and as much of the details as is necessary to a grasp of the leading ideas?

TO THE EDITOR OF THE —

Our institution is now undergoing a great transition. Whether she will emerge from it a rich and powerful university of engineering, or whether she will fall in the struggle with adverse conditions is as yet uncertain. The outcome depends entirely on the loyalty of the students, past, present, and future, and upon her reputation for turning out men who do everything they attempt better than anyone else can do it.

Under these conditions no more important step could have been taken by the students than that of entering major inter-collegiate sports. A really fine baseball team could not help strengthening the position of the school. It would show to begin with that our students are proud of representing the school, a fact which the public (not without cause) is beginning to doubt. It would show that an engineer graduated from here would at least be likely to have a physique which would command the respect of his men, a consideration which is injuring us not a little at present. It would give men a chance of representing their college without having to submit to the one-sided development demanded by the track. Above all it would show the prep. school boys that we have some spirit. It is this quality in a college more than anything else which attracts the best men to it.

The team might do even more. It might be able to aid as

did the Carlisle football team some years ago, when it built the University a new lecture hall and gymnasium from the proceeds of its games. It would certainly have an influence in keeping the school in touch with the alumni through bringing the latter back to the games. A really good team would be invaluable.

If a good team will help the school, it hardly needs to be said that a poor one will injure it. A half-coached, ill-equipped, and unsupported team, well-whipped for one season, will disgust more alumni, cast more discredit on the ability of the students, and generally injure our reputation more than any other one thing which could be devised. Everyone will agree, I think, that rather than this we might better have left things as they were.

What have we, however, done? All men interested in varsity baseball are asked to sign slips. An enormous number did so. A meeting was then called. An attendance of about four hundred was expected, and it was supposed that those opposed would be on hand to argue against the organization of a team. As a matter of fact there were only about thirty men there. Of these one was opposed to the measures taken, but he said not a word. The men who had signed the lists, the members of the athletic association, the members of other teams, and even many of our best ball players, were conspicuous by their absence. Under these conditions it is not surprising that a team was organized by a body composed half of enthusiastic baseballists and half of freshmen who did not know any reason for not organizing it.

The men who were not at that meeting have two courses now open to them. They can express their desire to have that team abolished by writing to the athletic association; if they do not write, they must stand ready with every bit of their share of time, energy, and money to make that team the finest in the country.

I imagine some will do neither. If a very large number do not take the necessary interest to express their opinion, it seems to me that something is radically wrong with the education given by our college.

Will the man who cannot delay his lunch five minutes to vote on a question that may involve the honor of his Alma Mater turn over his hand to save an employer's property? Will he ever contribute as an alumnus to the support of his Alma Mater? Should we then continue to graduate such men?

*Student's letter to a school paper*

#### OUTLINE

- (1) The school needs help from the students.
  - (a) It is at a critical period in its history.
- (2) This help can best take the form of competition in major athletic sports.
  - (a) Such competition would show the public our spirit.
  - (b) It would assure employers of the physical fitness of graduates.
  - (c) It would give a better training than track-work.
  - (d) It would attract students.
  - (e) It would bring financial support.
- (3) This competition must be heartily and generally supported.
- (4) The steps already taken have not the support of the student body at large.
- (5) It is not too late to oppose or support.
- (6) Men who do neither show no promise of future usefulness.

2. Compare the two following outlines with the text of Briggs, "School, College and Character," Chapter V (Houghton Mifflin Company, Boston, 1902). Which seems the more nearly to represent the real structure of the essay? Let the portions of the essay corresponding to Sections 3 and 8 in Outline B be read aloud while the student attempts to note down briefly the missing sub-headings. This book has been selected as likely to be found on the shelves of most college libraries.

*The Transition from School to College*

(A)

- (1) College is a privilege.
  - (a) It is not, therefore, to be attempted without preparation.
  - (b) This preparation is the difficult preparation of a boy for manhood.
- (2) The freshman's predicament.
  - (a) He may now for the first time "go out into the world."
  - (b) A gradual adjustment, properly begun in school, should accomplish for him this transition.
- (3) The freshman's helps.
  - (a) An element of gradual and continuous adjustment in athletics.
  - (b) Another in study, but this is effective only for the exceptional, for
    - (1) The average fellow, regarding study as an obligation, is unequal to it as a privilege; and
    - (2) He has to learn the hard lesson of the responsibility of freedom.
    - (3) The inspiration of study as a privilege is a great help.
  - (c) Another help is the interest and advice of college officers.
  - (d) Another, protective agencies in school and college.
  - (e) The best, friendly supervision in college.

(B)

- (1) College life is a privilege not to be entered into lightly.
- (2) It is often undertaken with insufficient preparation.
- (3) To give the right sort of preparation is difficult, for
  - (a)
  - (b)
  - (c)



- (4) There should be a gradual increase of responsibility through school and college.
- (5) It is the time of going out into the world (though sometimes earlier).
- (6) The best school training ought to make the transition easier by instilling principles (for the freshman's ideas are in many things irrational).
- (7) Continuity is the solution.
  - (a) Seen in athletics (in spite of faults): illustration of its helpfulness in the first danger of the year, — "seeing life."
  - (b) Summary of its effects.
- (8) The incentive of study is not strong enough to be very helpful, for
  - (a)
  - (b)
  - (c)
  - (d)
  - (e)
  - (f)
- (9) Summary of difficulties; tendency to neglect work.
- (10) (a) More restrictions in college perhaps of advantage.
  - (b) More responsibility in later years of school certainly so. Example of the prefects.
- (11) The best protective agency is friendly supervision in college.

3. The following selection is from Bryce, "The American Commonwealth," Vol. II, p. 210 (Macmillan and Company, London, 1889).<sup>1</sup> The student should attempt to take notes from hearing it read aloud. Here there is no strongly marked division of main headings. The chief object of the note-taker ought to be to jot down enough characteristic phrases to suggest the substance.

<sup>1</sup> Reprinted by permission.

Whenever possible, he should avoid the attempt to put ideas into his own words, and content himself with writing parts of what he actually hears. The notes should not be crowded; nothing is more surely fatal to the legibility of notes than the attempt to economize paper.

A business man reads in his newspaper at breakfast the events of the preceding day. He reads that Prince Bismarck has announced a policy of protection for German industry, or that Mr. Henry George has been nominated for the mayoralty of New York. These statements arouse in his mind sentiments of approval or disapproval, which may be strong or weak according to his previous predilection for or against protection or Mr. Henry George, and of course according to his personal interest in the matter. They rouse also an expectation of certain consequences likely to follow. Neither the sentiment nor the expectation is based on processes of conscious reasoning — our business man has no time to reason at breakfast — they are merely impressions formed on the spur of the moment. He turns to the leading article in the newspaper and his sentiments and expectations are confirmed or weakened according as he finds that they are or are not shared by the newspaper writer. He goes down to his office in the train, talks there to two or three acquaintances, and perceives that they agree or do not agree with his own still faint impressions. In his counting-house he finds his partner and a bundle of other newspapers which he glances at; their words further affect him, and thus by the end of the day his mind is beginning to settle down into a definite view, which approves or condemns Prince Bismarck's declaration or the nomination of Mr. George. Meanwhile a similar process has been going on in the minds of others, and particularly of the journalists, whose business it is to discover what people are thinking. The evening paper has collected the opinions of the morning papers, and is rather more positive in its forecast of results. Next morning the leading party journals have articles still more definite and positive in approval or condemnation and in prediction of consequences

to follow; and the opinion of ordinary minds, which in most of such minds has been hitherto fluid and undetermined, has begun to crystallize into a solid mass. This is the second stage. Then debate and controversy begin. The men and the newspapers who approve Mr. George's nomination argue with those who do not; they find out who are friends and who opponents. The effect of controversy is to drive the partisans on either side from some of their arguments, which are shown to be weak; to confirm them in others, which they think strong; and to make them take up a definite position on one side. This is the third stage. The fourth is reached when action becomes necessary. When a citizen has to give a vote, he votes as a member of a party; his party prepossessions and party allegiance lay hold on him and generally stifle any individual doubts or repulsions he may feel. Bringing men up to the polls is like passing a steam roller over stones newly laid on a road: the angularities are pressed down and an appearance of smooth and even uniformity is given which did not exist before. When a man has voted, he is committed; he has thereafter an interest in backing the view which he has sought to make prevail. Moreover, opinion, which may have been manifold till the polling, is thereafter generally two-fold only. There is a view which has triumphed and a view which has been vanquished.

Study the following set of notes taken from the same selection. Are the abbreviations such as the note-taker will recall after a reasonable interval? Are there any phrases that suggest merely the subject, not the idea expressed? Are the connections sufficiently indicated? What is the importance of punctuation in such notes? What would be the objections to the plan of writing such notes in complete sentences?

The form of notes here represented is probably the most common, and certainly the easiest to produce. There is no reason why the student should not make such notes more serviceable after the lecture by underscoring important

words or placing headings in the margin. The important qualities in notes used for review are that they should catch the eye quickly and prove suggestive enough to set the mind working on the subject.

Small part of our political opinion based on original thinking.

Business man, breakfast. Bismarek, mayor, sentiments aroused, various degree. Expectation of consequences, not based on conscious reasoning. No time to reason.

Sees n.p. ed. Train, friends, their opinions, counting-house, more newspapers. End of day, definite view.

Other men the same, particularly journalists, evening papers more definite, next morning more papers, solid opinion.

Then debate begins in n.p. Partisans appear, arguments.

Polls. Man votes as member of party, individual feeling repressed. Steam roller, stone road. When vote cast, man committed to his views.

4. The two outlines which follow were handed in by students to show what sort of essays they intended to write on the topic: "The Teacher's Share of Responsibility in the Development of Social Life at — College." Study them in contrast. The first (A) shows one of the most common and serious faults in outlines and briefs; the second is free from this fault. What is the fault, and why is it serious?

(A)

(1) Should we have any social life at — College? If so, should the instructors help to attain this condition?

(2) There should be social life at — College.

(3) The duty of the teachers concerning the increase of social life.

(4) How can the instructors help?

(5) The difficulties they would be obliged to overcome to assist to increase such life.

- (6) Attitude of instructors towards students.
- (7) Manner in which instructors might conduct classes.
- (8) Relations between students and instructors.
- (9) General opinion of instructors among the students.
- (10) Conclusion: Social life a failure and the reasons.

(B)

(1) The value of social relations between students and teachers is questionable because of the conditions here.

(2) The position in which the teacher is placed puts intimate acquaintance out of the question.

(3) The nature of the student activities tends to discourage association between students and instructors.

(4) The teacher can bring himself closer to students by introducing a more personal element into the class-room.

(5) The entertaining of students by teachers is generally impossible for financial reasons.

(6) Conditions in general seem to discourage the association of students and teachers.

5. The two sets of notes which follow were taken from a lecture on "The Common Sense of the Principle of Unity." Some work was done on each set of notes immediately after the lecture. Compare the two styles of note-taking, especially in regard to physical form. In (A) pick out the spots that show faulty method.

(A)

Unity. *Necessary* because supposed to have a purpose. Certain amount of exertion called for on reader's part; repay. So in talk, *Point*. Point in a larger sense is to have one thing to do and stick to it.

*It is always possible.* A requirement of themes and a special annoyance for freshmen. In novels; in magazine article by a scientific man; in letter home. *Yet* best novels have unity. *Newcomes*. *David Harum*. The play. Letters have still a

better sort of unity. Show the personality. Our work may do the same.

*Mechanical unity.* Not wander to other subjects.

*Unity of purpose.* As of the play. A logical connection.

*Unity of p. of view.* Show personality. The interest thus increased in all work, — even text-books.

*In paragraphs especially.* "One thing I do."

(a) To rest the reader; a natural pause indicated to the eye.

(b) The logic demands it. We must *get on*, from step to step.

An absolute requirement in all clear, business-like writing.

Examples.

*How developed.* From within, a growth. Any length, from sentence to chapter. Scale and proportion. Convenience for reader. Let it be a development around one sentence.

(B)

In the whole  
composition.

Necessary

because the reader expects return for his effort, i.e. *point*.

Possible  
always.

U. of the short theme a special adaptation of the general rule. *Some* sort of unity always in good writing, as: in a novel central interest; in a letter, unity of *point of view*, etc.

Kinds.

*Mechanical*  
of *point of view*.  
of *purpose*.

In the paragraph.

An absolute  
necessity.

(1) *To rest the reader.* Natural pause, indicated to the eye.

(2) *For logical reasons.* Gives the feeling of progress, step by step.

As to length

of paragraph. Amount contained depends upon

(1) Length of whole.

(2) Expedience, for "a single idea" may be expressed in a sentence or a whole essay.

6. The following extract is an account of the virtues proper to student life. The note-taker will attempt to get the main headings as they occur, to express them briefly and clearly, and to place them on paper in a conspicuous position; then under each to set down important details.

Love of truth for truth's sake is intellectual virtue. It promotes, it is the basis of, indeed it is morality. This is the temper of students in all colleges. Some are lazy, taking the line of least resistance; some regard study as a hardship and go about it doggedly; but to a man our students are truth-seekers, indignant towards falsehood and deceit.

A teacher who is ignorant is not respected. It is a fatal verdict "He does not know his subject." A teacher who evades facts, who is not downright honest in his opinions, is despised.

I said that intellectual conscientiousness promotes morality. It certainly promotes truthfulness in all relations. College men, whatever their faults and wrong-doing, will not tell lies. A man's word is sacred. A student who lies to a fellow-student might as well leave college. However damaging to himself, he will not put No in place of Yes to a president or a professor. This virtue, which is associated with the English gentleman, has become as distinctively the virtue of the American gentleman and scholar.

You will find that students mean to regard themselves as gentlemen. The ideal of everyone is the ideal of a gentleman — of an honorable, generous, courteous man. There is no place where meanness has so little toleration as in a college. You

will search long to discover a student who intentionally hurts the feelings of a fellow-student, or one who does not applaud the success of a comrade. A student must be a gentleman in all relations. Sports must be gentlemanly. There are queer notions, to be sure, of the manners, the speech, and the dress of a gentleman student; but the ideal in the essential moral quality is there.

Another virtue is the democratic spirit. Students constitute a democracy of merit and culture. In a university or college the rich and poor of all sections meet together and "earth's poor distinctions vanish here." Everyone stands upon his merit, not upon wealth or parentage. There are self-constituted, artificial aristocracies in some universities, but they are sneered at by real worth. The sturdy Kansas scholar is not impressed by, if he has even heard of, the blue book of Boston. Every college likes to boast that it is democratic and regards the reputation of being aristocratic as a slur. It is a distinct disadvantage to be wealthy. "He's rich, *but* he is a good fellow."

Loyalty is a virtue of students — loyalty to the college or university. One who excels in any respect must run, row, play ball, sing, write, debate, for the glory of the college. A student who will not come out is disloyal. He must make sacrifices for his college, his class, his fraternity. He will be a good citizen by and by, a patriot.

The college is imbued with the idea that the educated man is to render service. The colleges were founded to train men for service to the state and the world, and I doubt whether in any generation the aim has been more distinct than it is to-day. Success in occupation and profession, indeed, and in specific training for it, yet through success the promotion of righteousness. Our students intend to be leaders and helpers in the communities in which they will live, in education, citizenship, religion. Especially is the civic conscience awake. In the college is a mighty impulse to service. The university settlement is one expression of it. Training for intelligent citizenship is another expression. Educated men may be selfish; yet



a broad education is always understood to be, not for its own sake, not for personal culture merely, but to make teachers, leaders, ministers in society. The strongest impulse to social, political, philanthropic service has come from the college.<sup>1</sup>

7. The best way to test one's understanding of a passage and the value of the notes taken on it is to attempt to report it for some particular purpose. A lecture reported for the college paper is the most useful exercise. The notes should be studied in connection with the finished report, and the advice and criticism of the editors of the college paper will be helpful. If no such lecture is available, some public speech that happens to be reported in the newspapers may be read aloud.

Study as an example the following newspaper report of a speech by President Taft, together with the students' notes and reports which follow. Are the defects in the students' work due to a lack of understanding of the divisions of the talk, to scanty notes, or to other causes?

SALT LAKE CITY, UTAH, Sept. 26. — In the pulpit of the famous Mormon Tabernacle in this city, where, four years ago, Theodore Roosevelt, then President, preached a long sermon on right living and the duties of good citizenship, President Taft faced an audience which he said inspired him . . . "with higher thoughts of country and patriotism."

"A soft answer turneth away wrath, but grievous words stir up anger" was the text Mr. Taft selected from the Book of Proverbs. The sermon was a homely utterance, largely made up of a relation of stories to give emphasis to the points.

When Senator Smoot introduced the President to the audience in the Salt Lake Tabernacle, the cheering was so great that Mr. Taft could not begin his address for several minutes.

<sup>1</sup>Harris, "Shall the University Concern Itself More Directly with the Morals and Manners of the Students?" Proceedings of the National Educational Association, 1903.

"I am told that my distinguished predecessor, under the inspiration of an audience like this, delivered an address in the nature of a sermon upward of two hours in length. Now, he had the capacity, he had the spirit, and he had the mission to make such a preachment of moral force and inspiration. He knew how to appeal to the best that is in a man and a woman and arouse them to lift themselves to higher standards and higher ideals.

"But it has not been given to me to exercise that great influence which was his, and which shone forth from him as he stood before men upon a platform. And yet I have felt that on this Sunday morning it was necessary for me to make such effort as I could to follow him in something that may sound a bit like a sermon. And as sermons are begun with a quotation of a text having more or less relation to what follows, I am going to give you the words from Proverbs, 'A soft answer turneth away wrath, but grievous words stir up anger.'

"It is a text that has forced itself upon my mind during the last ten years with especial vigor, because I have come into contact with oriental peoples and with those descended from the Latin races of Europe, and I have had a chance to compare their views of life and their methods of speech and their social conventions and amenities with those of the Anglo-Saxon race.

"We Anglo-Saxons are, we admit, a great race. We have accomplished wonders in hammering out, against odds that seemed insurmountable, the principles of civil liberty and popular government and making them practical and showing to the world their benefits. But in so doing, and in the course of our life, it seems to me, we have ignored something that our fellows of Southern climes have studied and made much of; and that is the forms of speech and the methods of every-day treatment between themselves and others. At first that seems superficial to us, who prefer 'No' and 'Yes' and abrupt methods and communications in the shortest and curtest sentences, but we have much to learn from Southern peoples of that kind of courtesy and politeness.

"The truth is that a man's life in his family, with his wife,

with his children, with his mother, with his neighbors, is not made up of 'grandstand plays' and all that sort of thing. It is made up by a series of little acts, and those little acts and those little self-restraints are what go to make up the man's character.

"And so I say that our friends of the Southern climes and our oriental friends have touched a point in philosophy, the philosophy of life, that we may well learn from them, and introduce into our lives more courtesy and more politeness, more real desire to make everybody happy by the little things of life, which, after all, constitute all there is in life.

"Now, another corollary from the text which I should like to draw is that we ought to ascribe to our neighbors and to those with whom we come in contact as high motives as we can. We ought to avoid this acrimonious discussion that consigns everybody who is opposed to our views to perdition, and to having the most corrupt motives, and ascribe to those who stand with us only the purest motives. Life is too valuable to waste in anger and the charging and denunciation of our fellowmen when they don't deserve it.

"The truth is, this matter of hatred and resentment which accompanies the attributing of a bad motive to those who differ from you is a waste of nervous strength, of worry, without accomplishing one single good thing. I don't know how it has been with you, but it has happened time and time again with me that some man has done something that I did not like, that I thought had a personal bearing, and that I have said in my heart, 'Times will change and I will get even with that gentleman.'

"I don't profess to be free from those feelings at all. But it has frequently happened, I may say generally, that the time did come when I could get even with that man, and when that time came it seemed to me that I would demean myself and that it would show me no man at all if I took advantage.

"And so, my friends, what I am urging is less acrimony in public discussion, more charity with respect to each other as to what moves each man to do what he does, and not to charge dishonesty and corruption until you have a real reason for doing so.

"I am the last man to pardon or to mitigate wrongs against the public or against individuals. I believe, and I regret to say, that throughout this country the administration of the criminal law and the prosecution of criminals is a disgrace to our civilization; but it is one thing to prosecute a criminal when you have evidence, and it is another thing to ascribe motives to the act of a man when you have not any evidence and are just living in your imagination in respect to what you say.

"And now I cannot in the presence of so great an audience as this, an audience that inspires me with higher thought of country and patriotism, fail to refer to the depth of feeling that has been aroused in me of gratitude for your welcome, of an appreciation of the basis of that welcome, which is loyalty to your flag and country.

"I understand that in the great office of President, personality of the man who fills it for the time sinks, and that office typifies the nation, so that all people, of whatever party, ought to feel that for the man who for the time being holds the office they are manifesting a respect for the nation for which they live and for which they would be willing to die."

(A)

#### NOTES

*Taft's sermon in the Mormon Temple.* — Predecessor in similar circumstances delivered 2 hour sermon — Had power ability and — I am not gifted — but it is fitting that I should deliver a short sermon Text soft answer turneth away wrath Has been forced on me by study of European nations — Anglo-Saxons great but have ignored forms of speech courtesies etc. — We have much to learn — A man's life not made up of grandstand plays Is made up of little courtesies sacrifices etc. We ought to ascribe to our neighbors the highest motives possible — Life is too valuable to spend in denunciation — It is waste of time and worry — Personal experiences "I'll get even" spirit. Time came and restrained myself. I urge more charity, less acrimony. I am last man to pardon or mitigate wrong-

doing — One thing to prosecute criminal, another to ascribe low motives and condemn.

When a man enters the presidency, his personality typifies the nation — Farewell.

*An Account of President Taft's Sermon in the Mormon  
Tabernacle*

At the opening of his speech the president mentioned the speech of his predecessor two years before. In glowing terms he spoke of the ability of Theodore Roosevelt, and regretted that he was not gifted with the same eloquence and power. The occasion demanded, he said, that he preach something in the nature of a sermon, and, as sermons are generally begun by some scriptural text which constitutes the body of thought, he announced that he had chosen as a text the following passage: "A soft answer turneth away wrath but a grievous word stirreth up anger." The truth of this proverb, the president said, had been impressed upon him continually in his study of the nations of southern Europe. We Anglo-Saxons are a great race, but in our strenuous mode of life we have ignored the courtesies and niceties of speech common to the people of the Latin nations.

A man's life is not made up of grandstand plays, but of the small sacrifices and courtesies the importance of which is frequently overlooked. We ought to ascribe to our neighbors the highest possible motives, and not intentionally seek out the lowest and meanest. Life is too short and valuable to spend in denunciation. It is a waste of time and worry. Then the president cited several instances from his own life. Often, he said, when convinced of the lowness of some act of a fellow man, he had said to himself, "I'll get even!" When an opportunity did present itself, he always felt as if he would be doing something utterly beneath him if he should carry out his original intentions.

"I urge," he said, "more charity and less acrimony." The president stated that he is the last man in the world to pardon or mitigate wrong-doing. He spoke of the condition of the crim-

inal courts as "a disgrace to the civilization of the United States." It is one thing, argued Mr. Taft, to prosecute a criminal, and another to ascribe low motives indiscriminately and to condemn without reason.

He added that he had faithfully tried to live up to these principles, for when a man enters the presidency, his personality typifies the nation.

With a few words of farewell, the speech was concluded.

## (B)

## NOTES

*Taft "Lay Sermon in Mormon Temple"*

I'm told that predecessor delivered a sermon 2 hrs long. Had capacity — to make inspiring talk. Knew how to be inspiring. I have not his gifts. Yet have felt that I should follow him in a sermon, & — should have a text "Soft answer — grievous words"

This text impressed on me by contact with Orientals and Latins, & comparison of habits with Anglo-Saxons.

We are a great race, have overcome obstacles, & have demonstrated popular gov. But have ignored forms of common speech, etc. May seem superficial to some. But we have much to learn in politeness. In family life — not made up of grandstand plays, and little acts make up character. So L. and O. have little courtesies, make everybody happy, and make everyone get all there is out of life.

Another thing — high motives, which condemn those opposed to us, and vice versa. Life too short for charging and hatred. This is a waste of nerve, time, worry, no benefits. My experience, some man hurt me, I wish to get even. But when time came, found that I would be unmanly to do it.

So I urge less acrimony in public discuss. don't charge graft. Am last man to lessen wrong, & regret to say that prosecution of criminal in this country is awful. To prosecute from evidence is all right, but not ascribing false motives.

I cannot help say in pres. of such audience gathered for welcome, & basis of welcome. In office of Pres. typifies all America, & respect given it is from love of country.

*A Sermon Delivered by President Taft in the Mormon  
Tabernacle*

"I have been told that my illustrious predecessor in this pulpit delivered a wonderful sermon three hours long, and held an enormous audience spell-bound. He had the capacity for making inspiring talks, but I am sorry to say that I have not his gifts. However, I have felt that I should follow his lead by delivering a sermon, poor though it may be.

"A proper sermon should have a text, and for my text I have chosen the passage from Proverbs, 'A soft answer turneth away wrath: but grievous words stir up anger.' This text has been especially impressed upon me by contact with oriental races and with the Latin races of Europe, and by a comparison of their habits and modes of expression with similar characteristics of the Anglo-Saxon race.

"We Anglo-Saxons are a great race. We have pushed steadily forward through almost insurmountable difficulties, and have above all demonstrated to the world the possibility of popular government. But one thing we have ignored is the speech we use in our ordinary relations with each other. We also have much to learn in politeness to one another. This may seem superficial to some, but nevertheless it is important especially in our family life. This life is not made up of grandstand plays, and we have to determine a man's character by little things. The oriental and Latin races have many little courtesies and thoughtful acts, which go to make everybody happy, and let everyone get all there is out of life.

"Another trait of ours which we should be well rid of is the tendency to question each other's motives. We are all inclined to see nothing but bad in those opposed to us, and nothing but good in those on our side. But life is too short for all this condemnation and hatred. It is only a waste of nervous force and

time, and is a constant source of worry. Absolutely no benefit is derived from it.

"I do not claim to be immune from this same tendency to condemnation and questioning motives. More than once I have felt that some man was deliberately trying to injure me, and have determined to get even. But when my opportunity for this came I found that it would be unmanly of me to take advantage of it.

"So I urge less acrimony in public discussion. Don't charge false motives, and try to see that most men are sincere in their actions. I am the last man in the world to try to belittle the injustice and wrong which I know do exist. For example, I regret to say that our method of prosecuting criminals is one of the worst things in this country to-day. It is perfectly just to prosecute a man for his crime according to the evidence, but when we seek to ascribe motives for the crime we are exceeding our rights.

"I cannot help but express, in the presence of such an audience, the gratitude I feel for the welcome you have extended to me, and for the motive which I know was the basis for this welcome. In showing respect for the office I hold you are but expressing the great love you have for your country."



## CHAPTER II

### THE EXTERNAL CONNECTIONS OF THOUGHT

ONE who has followed through the exercises in the preceding chapter, bending all his energy, perhaps for the first time, upon an attempt to grasp the essential thought in what he hears, will find that his ability to understand a talk depends upon a sense of connection. Once he "loses the thread," he loses all. He then knows, either that he has misunderstood, or that the speaker is incompetent. There must be an evident connection } between the separate parts; there must be such an arrangement that from beginning to end things seem to have been composed in accordance with a plan. This connection, however, assumes a variety of forms, some more artificial than others, and each valuable for certain purposes. These we shall next attempt to study and to distinguish, by tracing them back to fundamental principles of the working of the mind. Then, in the exercises, we shall try to detect them as they occur in prose.

The ability to speak or write connectedly, at the same time following a larger plan for the connection of the whole, is not altogether a gift of nature. Indeed it is acquired, by most people, only at the expense of long training; and usually it demands laborious study. This training in some degree most of us get. In our mature years we are all able to control more or less the action of our minds and to guide them at will into various forms of mental gymnastics. To the end, however, these remain somewhat artificial processes.

The normal working of our minds, when not under pressure of the will, is by no means so ambitious. At such moments we are little more than spectators at a panorama. Successive mental states present themselves before our attention without saying "By your leave," and we are controlled by them till they are pushed out by fresh ideas. Between these successive feelings and pictures there is always a thread of connection, slight enough in many cases, but still sufficient to enable us to think of each as dragging its successor into the mind by some natural bond of union. Thus the student seats himself at his desk to prepare a lesson. As he opens his book his eye falls upon a penwiper, the gift of a friend. By this suggestion his mind passes to his friend, to their summer trip together, to canoeing, to the need of a new canoe, to the possibility of deserving it by success in his studies, and so, perhaps, back to the task before him. His thought, up to this time, has run naturally, and has been in no way forced or directed. Now, however, he opens his book, and at once the situation changes. From this moment he must exercise his will, summoning, comparing, and arranging ideas as best he may. The former state of mind is sometimes called reverie; the latter is known as thinking.

Behind the order of mental pictures presented in reverie there is, of course, no rational purpose, but merely accident. Some are suggested by chance associations, mere whims of the mind, depending on the personal character and past experiences. Thus the sight of a beet may suggest to one a fish dinner, to another a chemical formula, and to a third certain arguments for a high tariff on sugar. Again other ideas come through the senses. These, too, occur illogically, in any order in which the relations of time and space may happen to

present the objects that suggest them. The events of a day, or the sights and sounds of a walk through city streets, have the same sort of relation to one another as have the bricks in a pile dumped from a wagon. Thus our mental material is tumbled in upon us in confusion. Such connection as exists may be due to association. Then, likely enough, it is so roundabout or so whimsical that the thinker could scarcely explain it, even to himself. Again it may be physical connection. In this case it depends upon the pure accident of how events in the world about us happen to fall out.

Since there is no purpose behind the order in which ideas occur, if we make use of them for a purpose, — to weave them into a story, for instance, to employ them to prove a point, or to direct them toward the solution of a problem, — we can do so only by selection and arrangement. Of all selected orders, the simplest, the least strained, and the most nearly natural is narrative. Here the mind so chooses and arranges ideas that in the main their arrangement is governed by time. Stories, dealing with both fiction and fact, fall within this class; but so in particular cases may a description, an explanation, or an argument. We may, for instance, describe a four-cycle combustion engine in narrative, simply by following the order of events as the piston moves. A large part of our speaking, as well as of our writing, is in this sense the telling of stories; and it is, indeed, the most effective part. In speaking, particularly, it is often wise to throw the outline of your speech into the narrative form. So you catch and hold your hearers. The one constant subject of thought is the passage of time; the one inevitable connection of thought is the time order. Thus it happens that the simplest and the most common arrangement of thought is that which expresses itself in narrative.

No well-told narrative, however, relies for its order wholly upon the passage of time. The incidents described are usually put together in the sequence in which the events occurred; nevertheless their real bond of union is not time. Stories, for instance, do not reproduce all that took place at the moment, but in the large and intricately woven pattern of life they follow a single thread. The principle which holds them together and gives them the right to be called stories is the purpose which guided the selection of details. Possibly they illustrate character, or prove a point, or further the development of some larger plot. There must be some aim behind them, or else they serve merely to fill the mouth with words. Precisely the same thing is true of all other forms of narrative. We demand that they show an orderly development and a conclusion. In the effort to secure these we take many ideas and "compose" them, or put them together into one. Thus even the most elementary of our mental processes is characteristic of all the rest. It shows the real labor of thought to be a labor of unification.

A second selected order of ideas which comes very near to reality and actual experience is that which depends on the relative position of objects, or parts of objects, in space. This sort of thinking, expressed in words, is called description. Descriptive thinking does not, however, any more than narrative, make use of the crude reality. The eyes and, each in its measure, the other senses are constantly putting the thinker in contact with fresh experiences. He walks from the railway station to his suburban home. He loses his overshoe in a puddle, he is grazed by an automobile, he finds his path blocked by a city gang constructing a sewer. So far there is no material for descriptive thought in his experience. The puddle, the automobile, the excavation, — these by destiny

fall together in the same street at the same moment. Their conjunction is an accident; it is illogical. If now the thinker wants to make logical use of his experiences, he must first discover some principle which will make them one. In the world of events they are not one, but three; his principle, therefore, must be a mental principle, a thought. Perhaps he hits upon the idea that here are three examples of the trials of suburban residence. Then at once he has material for description. If he is a witty fellow, he will make a dinner-table topic of it; if a student, perhaps a theme. In either case the thing most evident to his hearers will be that his description has a point. He has forced his idea on the chaos of nature and created a mental unit. Out of many he has formed one.

The natural relations of objects in space do not, of course, always appear illogical. It is, for example, for the reasoning faculty an accident that one sees a tree on the top of a hill, but not an accident that the tree bears leaves. The tree is an individual, and all the natural objects that we call individuals, from a crystal to the human body, stand before our minds as representing an organization of details under one idea. The position of their parts, therefore, may be said to have a kind of necessity for thought; in knowing what function the leaf performs for the tree, or the arms for the body, we see the logic of the situation. In a similar way objects constructed by man convey to our thought notions of the purpose behind their design. With these ideas in mind it is possible to test the construction and to find a kind of common sense, a reasonableness or the lack of it, in the relation of parts. Even the landscape comes through perspective to represent a thought. As its appearance depends upon the position of the observer, it embodies, from whatever point one observes it, a principle of unity. Hence the beginner can

compose more successfully in describing a scene, a building, or a mechanical device, than in relating the incidents of even the most enjoyable outing. When confronted with a series of events, he has not the skill to connect them through a central idea. Things which have developed naturally, however, or been constructed by man, present a simpler problem. Such objects, by their very appearance, impose upon the mind a sense of their unity.

Thus, if we let our minds take their own course, they lead us round and round in reverie. They merely stray to whatever topic makes the strongest momentary demand upon the attention, and from whatever is unattractive they turn aside. With this method, if we get anywhere, it will be by accident; and so from the formation of our first purposes we begin to see the need of a different procedure. After that time the progress of our education may be measured by the degree of our ability to stop these wanderings of the mind. There are some attractive ideas, we learn, which must be shut out, at least for the moment, because they interfere with our work. In this business of keeping order the will must guide; like the driver of a dog-team, it must lash and coax along the whole wavering line. To give it the power and the skill necessary for this strenuous work is the fundamental task of education.

In this education, as far as logic deals with it, the first step is training in the mental processes most nearly spontaneous. The student will learn how to tell a story so that something comes of it; giving enough detail to suit his purpose, and yet introducing nothing except what counts. He will attempt to describe things so that they grow up in the mind as wholes. Here, in a way, he follows nature. Yet he learns that, even in the most natural mental processes, though thought sometimes adopts an order suggested by the outside world, it must still modify

the suggestion to suit its own aim. Behind every order of thought there must be a purpose; and the existence of a purpose should be a sufficient guarantee that all the steps in the mental process lead toward it.

### EXERCISES

1. The following exercise illustrates the natural relations of ideas. It was the author's purpose, not to write a "theme," a task which at the best he would have thought of as somewhat artificial, but merely to reproduce as fully as he could the ideas which passed through his mind during the time described. Since his memory was good, he succeeded in putting on paper a fair picture of the mind when it is not on dress parade. For our present purpose nothing could be more helpful. Study the sentences to determine how one thought probably suggested another.

I may as well go hunting. I know I won't get a thing, for there isn't a bird within ten miles of here. Where is my hunting jacket? Oh, yes, it's in the dark closet. I'll probably get into the pond, for the ice must be weak over the springholes after this thaw. I'd better pull my boots up high before I start. Six shells will be enough.

My! but it's hard walking! Sink way through. I may as well load the gun in case I should scare up anything. Someone has been along here recently. I'll bet they didn't catch a thing, for there are no fish in the pond since the dam broke last summer and let all the water out. My! but wasn't it fine fishing then when the pond was way down! Shot a partridge here last winter. Wish I could see another this year, but there are no tracks of any around. Queer there are no birds this year. What was that? Probably some of those little birds over in that thicket. Wish it were a partridge. Ouch! I didn't see — Whirr-r-r! Oh! it was a partridge! Oh! con-found that stump! Why did I fall? The only one I've seen

this year, but I'll not see it again; it's too thoroughly frightened, and I'm going back to the city to-morrow. Well, if that isn't hard luck! To see the only bird around here and not be able to get even a shot at it! There ought to be another near, but there can't or it would have flown long ago. I may as well go on to the pond and walk around the edge. Bet I break through when I first step on the edge. No, the ice isn't so thin as I thought. Wonder where that partridge flew? I didn't notice the direction. Hello! there are three men fishing through the ice. I'll go over and speak to them.

"Hello! Caught anything?" "No. Just come." "How many traps you got out?" "Twenty." "I don't believe you'll get much, because, you know, the dam broke last summer, the pond went way down, many of the fish were caught, and a good many went through the dam. Say, where did you get the minnows for bait?" "Caught them this fall and kept them in a brook behind the house." "I'd like to know where I could get some. Know of any?" "What do you want of minnows if there are no fish in the pond here?" "Oh, I shouldn't fish here." "Where then?" "That's a secret. Well, I wish you luck."

Those fellows won't catch a fish if they stay there till doomsday. My! but I'd like to scare up a bird along here. I couldn't help getting him before he got to the top of that hill. Crack! Oh, but that water's cold! I'll look where I'm going and not get into another springhole. Those look like duck tracks. They are. Must be staying up where the brook comes in from the pond. I'd go up, but the ice is always so thin and treacherous up that way. I got in there last winter while racing. Wish I hadn't been ahead then; Richards would have gone in instead. I may as well go up and see Richards while I am about it. I wonder how he likes working in the mill, sawing logs?

2. The following story, from the fifth chapter of *Second Kings*, is an admirable example of a narrative nearly perfect in method. Notice the omissions and try to account for them. Can you state the purpose of the narrative,



in the form of a moral or otherwise? How far is the form of the narrative governed by this purpose? In particular, is the second incident part of the first in purpose or a separate story?

Now Naaman, captain of the host of the king of Syria, was a great man with his master, and honourable, because by him the Lord had given victory unto Syria: he was also a mighty man of valour, but he was a leper. And the Syrians had gone out in bands, and had brought away captive out of the land of Israel a little maid; and she waited on Naaman's wife. And she said unto her mistress, Would God my lord were with the prophet that is in Samaria! then would he recover him of his leprosy. And one went in, and told his lord, saying, Thus and thus said the maid that is of the land of Israel. And the king of Syria said, Go to, go, and I will send a letter unto the king of Israel. And he departed, and took with him ten talents of silver, and six thousand pieces of gold, and ten changes of raiment.

And he brought the letter to the king of Israel, saying, And now when this letter is come unto thee, behold, I have sent Naaman my servant to thee, that thou mayest recover him of his leprosy. And it came to pass, when the king of Israel had read the letter, that he rent his clothes, and said, Am I God, to kill and to make alive, that this man doth send unto me to recover a man of his leprosy? but consider, I pray you, and see how he seeketh a quarrel against me. And it was so, when Elisha the man of God heard that the king of Israel had rent his clothes, that he sent to the king, saying, Wherefore hast thou rent thy clothes? Let him come now to me, and he shall know that there is a prophet in Israel. So Naaman came with his horses and with his chariots, and stood at the door of the house of Elisha. And Elisha sent a messenger unto him, saying, Go and wash in Jordan seven times, and thy flesh shall come again to thee, and thou shalt be clean. But Naaman was wroth, and went away, and said, Behold, I thought, He will surely come out to me, and stand and call on the name of the Lord his God,

and wave his hand over the place, and recover the leper. Are not Abanah and Pharpar, the rivers of Damascus, better than all the waters of Israel? may I not wash in them, and be clean? So he turned and went away in a rage. And his servants came near, and spake unto him, and said, My father, if the prophet had bid thee do some great thing, wouldest thou not have done it? how much rather then, when he saith to thee, Wash, and be clean? Then went he down, and dipped himself seven times in Jordan, according to the saying of the man of God; and his flesh came again like unto the flesh of a little child, and he was clean.

And he returned to the man of God, he and all his company, and came, and stood before him: and he said, Behold now, I know that there is no God in all the earth, but in Israel: now therefore, I pray thee, take a present of thy servant. But he said, As the Lord liveth, before whom I stand, I will receive none. And he urged him to take it; but he refused. And Naaman said, If not, yet I pray thee let there be given to thy servant two mules' burden of earth; for thy servant will henceforth offer neither burnt offering nor sacrifice unto other gods, but unto the Lord. In this thing the Lord pardon thy servant; when my master goeth into the house of Rimmon to worship there, and he leaneth on my hand, and I bow myself in the house of Rimmon, when I bow myself in the house of Rimmon, the Lord pardon thy servant in this thing. And he said unto him, Go in peace. So he departed from him a little way.

But Gehazi, the servant of Elisha the man of God, said, Behold, my master hath spared this Naaman the Syrian, in not receiving at his hands that which he brought: as the Lord liveth, I will run after him, and take somewhat of him. So Gehazi followed after Naaman. And when Naaman saw him running after him, he lighted down from the chariot to meet him, and said, Is all well? And he said, All is well. My master hath sent me, saying, Behold, even now there be come to me from the hill country of Ephraim two young men of the sons of the prophets; give them, I pray thee, a talent of silver, and two changes of raiment. And Naaman said, Be content, take two talents.

And he urged him, and bound two talents of silver in two bags, with two changes of raiment, and laid them upon two of his servants; and they bare them before him. And when he came to the hill, he took them from their hand, and bestowed them in the house: and he let the men go, and they departed. But he went in, and stood before his master. And Elisha said unto him, Whence comest thou, Gehazi? And he said, Thy servant went no whither. And he said unto him, Went not mine heart with thee, when the man turned again from his chariot to meet thee? Is it a time to receive money, and to receive garments, and olive-yards and vineyards, and sheep and oxen, and men-servants and maidservants? The leprosy therefore of Naaman shall cleave unto thee, and unto thy seed for ever. And he went out from his presence a leper as white as snow.

3. Determine how far the order and connections in the following passage depend upon the natural order of observation. Would any other order — a logical one — be better?

A bevel grinder is a machine for putting a bevelled edge on planer knives, splitting knives, and any knife which has a long, straight edge. Though at first appearance the machine looks too small to be of any important use, it is a paying machine. That which attracts attention toward the machine is a large emery wheel about three feet in diameter and two inches in thickness; and a long, narrow iron table in front of the wheel. The shape of the frame is like that of an inverted cow-bell, with two arms at the top which act as supports for the shaft of the emery wheel.

At the left end of the shaft on which the emery wheel is are two pulleys, one loose, the other fixed to the axis. At the other end is a wide-faced pulley, over which passes a small belt to three one-inch-face pulleys, which are on a second shaft in the lower part of the frame. Two of these three pulleys are attached to gears inside the frame. The inner one, or one next the frame, has a hollow axis which revolves upon the shaft of the outer pulley. The gears of these pulleys act on diametrically oppo-

site points of a large gear, so that, when both pulleys turn in the same direction, they produce opposite motions upon the large gear, since they are two forces acting on diametrically opposite points of a circumference. The shaft of this large gear is perpendicular to the shaft of the three pulleys, and extends to the front of the machine, inside the table, and ends in a small gear which acts on a long, geared plate fixed to the inside of the table. This table slides upon a projection from the frame, and is furnished with a top which can be tipped to any angle in order to get any length of bevel, and which can be pushed by screws toward or away from the emery wheel. In the front part of the table are two adjustable nuts, which slide in a horizontal slot and can be adjusted so as to have any distance between them, from six inches to the length of the table. On the inside of the table these nuts are attached to iron knobs. As the table slides right and left these knobs alternately strike the arm of a lever which is fixed in the frame of the machine and move the lever first one way, then back. The other arm of this lever ends in a loop through which passes the small belt, so that when the lever is moved back and forth it moves this belt from the inner to the outer of the three small pulleys, thus continually reversing the movement of the large gear, and consequently moving the table back and forth before the emery wheel, and by this means grinding the knife evenly from one end to the other.

Now let us go over the motion of the whole machine. Suppose the knife to be ground is clamped on the table and adjusted, and that the table is as far to the left as it can go. Then the inner arm of the lever is against the right-hand nut of the table and the small belt is on the inner of the three small pulleys. Now start the machine by pushing the main belt upon the main fixed pulley of the emery-wheel shaft, and, at the same time, fix the left-hand nut just below the left-hand end of the knife. As the emery wheel turns, it turns, by means of the small belt on the wide pulley, the inner small pulley. This gives a counter-clockwise motion to the large gear, and this pushes the table to the right. When the emery wheel strikes the knife, it grinds away from the edge and passes along the length of the knife.

As the table passes to the right, the left iron knob strikes the arm of the lever while the emery wheel passes beyond the left-hand end of the knife, and pushes the small belt from the inner pulley, over the loose middle one, and upon the outer pulley. This pulley gives a clockwise motion to the large gear and the table is pushed back again to the left; the emery wheel grinds backward over the knife, until the wheel passes over the right-hand end of the knife; when the right-hand nut strikes the lever arm and forces the small belt over on the inner pulley. Thus the machine takes care of itself.

## CHAPTER III

### THE MENTAL CONNECTIONS OF THOUGHT

If we set a beginner in composition to thinking about some period of time through which he has lived, or about some object which he has seen, he finds it an easy matter to deal with these things part by part, in a connected way. He merely follows the order of time, or explains one thing after another, in accordance with the position in which he saw them. Much of his work is already done for him. Though nature does not suggest the point of his story or description, it at least furnishes a means of connecting the parts. Suppose, however, that his task concerns the treatment of an abstract topic. It may have occurred to him, perhaps, to deal with his own views on national politics. This subject is before him, not as an existing thing to be worked over to suit his purpose, but merely as a possibility. He has read the papers, talked with his father, and argued with his friends; he begins to realize that he will soon be old enough to vote. Here, then, is an idea capable of development. He feels that he can probably join to it enough details to give it some force. The composition of these details is clearly possible, if he can get the right connection. This connection, however, is a purely mental thing. If it satisfies him when achieved, if he thinks it right, that will be merely because it represents one of those steps in thinking which his mind is accustomed to take.

What, then, are the accustomed steps in thinking?

Without attempting to exhaust the list, we may call attention to five, so generally employed that with these alone we may analyze any piece of prose and show the relations of its parts, thought by thought, with sufficient accuracy for every practical end. It has occurred, for instance, to our writer on politics that he can develop his subject by bringing out the details. He will speak separately of his views on the two great parties, on the progressive and insurgent movements, and on the place of national politics in local affairs. In such a plan there will be an obvious connection, for the subheadings bear to the main topic the relation of part to whole. This is an accustomed relation of thought. The mind passes easily back and forth between details and a comprehensive statement. Through this sort of connection, the parts of a composition are brought together in a summary, or foreshadowed in an introduction; specific instances lead to a general law; and an illustration or concrete example is easily connected with the thought it is supposed to enforce. In short, the relation of whole and part is one of those most commonly used in thinking.

Again, suppose the writer to have made a statement which he thinks not quite self-explanatory, or which seems too important to be limited to a single sentence. He then proceeds to put the same idea later in another form of words. Perhaps he prefaces the new sentence with some such phrase as, "That is to say." As a rule, however, no connective words are required, for this sort of connection also seems to the mind quite simple and natural. The same relation exists, in a mechanically constructed paragraph, between the introductory statement and the conclusion. We may call it, for lack of a better term, the relation of equivalence.

The third of these accustomed steps in thinking is

comparison. This may result in a sense of similarity or of contrast. Thus, perhaps, it will occur to the writer on politics to show the apathy of American college students towards political subjects. This he may do by calling attention to the hot-headed activity of certain groups in continental universities. In this method of developing the topic is an instance of contrast. Or again, in speaking of the corrupt politics of recent times, he may show that this condition is not merely a modern evil, and refer to earlier examples, as carpet-bagging or the Tweed ring. These instances will then stand to his subject in the relation of similarity. Comparison, in general, is a powerful mental bond. So far is this true that it has been made the basis of many rhetorical tricks. The balanced sentence, for instance, is one of the last of these to retain popular favor. In ordinary prose, also, no relation more frequently occurs than that of contrast; and the most overworked of all connective words is "however."

The remaining two relations, that of cause and effect, and that of reason and conclusion, though sometimes hard to distinguish, are on the whole easily recognized. If, for instance, the student wishes to explain why he started his political career as a strong Republican, he will perhaps refer to his father's views, or the general feeling among his friends, or the editorial position of the newspaper he used to read. These were causes—that is, preceding conditions—which prepared his mind for the attitude he took. If, on the other hand, he were stating a matter of opinion, and not a matter of fact, he might try to justify it with reasons. He might, for instance, attempt to show that the political influence of the newspapers is on the whole good, and back up his assertion with the statement that they give publicity to all minor offenses, and so hold petty graft in check. This is the relation of reason and conclusion.



There are, then, five important relations of thought: that of whole and part, that of equivalence, that of comparison, that of cause and effect, and that of reason and conclusion. In their simplest meaning these are all so familiar as to require almost no explanation. They may conveniently be studied in any piece of prose which is not narrative or description. There they will be detected as a kind of principle which binds the preceding idea with that which follows. Reduced to its lowest terms, this principle will generally prove to be one of the relations mentioned above. Consider, for instance, the following passage from Milton.

“ A wealthy man, addicted to his pleasure and to his profits, finds religion to be a traffic so entangled that of all mysteries he cannot skill to keep a stock going upon that trade. What should he do? Fain he would have the name to be religious, fain he would bear up with his neighbours in that. What does he, therefore, but resolves to give over toiling, and to find himself out some factor, to whose care and credit he may commit the whole managing of his religious affairs; some divine of note and estimation that must be. To him he adheres, resigns the whole warehouse of his religion, with all the locks and keys, into his custody; and indeed makes the very person of that man his religion; esteems his associating with him a sufficient evidence and commendatory of his own piety! So that a man may say his religion is now no more within himself, but is become a dividual movable, and goes and comes near him, according as that good man frequents his house. He entertains him, gives him gifts, feasts him, lodges him; his religion comes home at night, prays, is liberally supped, and sumptuously laid to sleep; rises, is saluted, and after the malmsey, or some well-spiced bruage, and better breakfasted, than He whose morning appetite would have gladly fed on green figs between Bethany and Jerusalem, his religion walks abroad at eight, and leaves his kind entertainer in the shop trading all day without his religion.”

In this bit of reasoning, the first idea and the second are in contrast. Religion is more than he can attend to; yet too important to be given over. The next thought explains a situation which arises from this state of things as a result from a cause. Since he cannot attend to it himself, he turns it over to a factor. The details of his treatment of the factor merely elaborate the thought that he employs one. Here is an illustration of the relation of whole and part. Again, the sentence which begins, "So that a man may say his religion is now no more within himself," is developed as a logical consequence of the idea which precedes. It is a conclusion drawn from the reason that he has hired another to impersonate him. Or it may be thought of as equivalent to it, another way of putting the substance of the same idea.

Such, then, are the logical couplings of thought. Though not always so distinct and evident as in the passage above, they repeat themselves again and again through all prose. With the simple exercise of learning to detect and to distinguish them the practice of logic properly begins. A study of the relations of thought in their general form, and the attempt to apply them to the analysis of written work, should prove a valuable mental training. The general relation of thought is always disguised as the connection of two particular ideas, dressed out in particular phrases; and it comes upon you thus when you are thinking of other things. In the exercises which follow this chapter and the next, one must learn to penetrate this disguise. This work should greatly increase the power of abstract thought. At the same time such training has a practical value. When the outline of ideas for an essay is being assembled, and again later, in the attempt to rewrite and improve incoherent passages, no acquirement can be more helpful than the habit of seeing at once the

general form of the thought relation. It will enable the writer to rearrange his material and to connect it in a logical way.

### EXERCISES

1. What relation of thought governs the connection between the following sentences?

(a) He hoped that his work might amount to something more than mere imitation. He felt that plenty of people were engaged in that already.

(b) He maintains that the only way a man of average ability can get on in these days is by having a "pull." This I deny in general and in particular.

(c) I admit that his manners are awkward and his conversation heavy. Still, whenever he comes into the room, you are glad to see him.

(d) The articles of my belief are two. First, no man can thoroughly learn a thing unless he likes it; he can know only what his disposition fits him for. Second, no matter how much you commit to memory, you will be none the wiser till you come to use what you have acquired.

(e) He made no secret of his self-conceit. When a case went against him, he attributed his defeat to the stupidity of the jury. All the cases he won he said were won by pure force of wit.

(f) It is foolish for us to complain because we fancy ourselves not appreciated by a teacher or an employer. When we consider how busy other people are, and how self-centered, it appears a wonder that they notice us at all unless we force it. We ought constantly to remember how much more important we seem to ourselves than we possibly could be to them.

(g) The time has passed when people in comfortable circumstances can manage the government with the main object of keeping comfortable. There are now too many ways in which those who are uncomfortable can combine to make their views prevail.

(h) If you have never lived near a railroad track, you do not know what noise is. Whistles blow, bells ring, and engines puff from morning to night.

2. Study the thought relations which connect the sentences in the following paragraphs. Rewrite the paragraphs, supplying connecting words and phrases or recasting sentences so as best to express the thought relations.

(a) My greatest difficulty is in getting started to write a theme. I find that all my thoughts have spoiled on my hands the minute I sit down to begin. I was intending to write of the last football game, for instance; I can think of nothing except what the *Herald* said in its editorial. I have to give up that subject. I may have thought that I would tell a funny thing that happened to me lately; I seem to remember that I have read the same joke somewhere in a paper. There is always some scruple to keep me from writing the first sentence. My trouble all vanishes if I can only get through that first sentence.

(b) Small schools and colleges ought to combine in circuits and hire their teachers in common. It would enable the professor to get exercise like a country doctor, riding about in a gig. This would keep his head clear for the lecture. It might necessitate confining the classes to one lecture a day, as Dr. Smith on Tuesday in Greek, Dr. Jones on Wednesday in Calculus, and so on; but one clever lecture would be better for them than many dull ones. The advantages would be many. For the pupil, it would mean competent instruction and a frequent change of masters. The teachers would get the pay they deserve, and would not be turned into mere police officers.

3. Analyze and explain the relations of thought which connect the ideas in the following extract.

There are three places where one may draw the line for getting a piece of work done. One man draws it habitually a few minutes or hours or days after it is due. He is always in dis-

truss, and is a nuisance to everybody else. There is no dignity in a life that is as perpetually behind its opportunities as a tail is in the rear of a dog.

It is very risky — ethically speaking it is cowardly — to draw the line at the exact date when the work is due; for then one is at the mercy of any accident or interruption that may overtake him at the end of his allotted time. If he is sick or a friend dies, or unforeseen complications arise, he is as badly off as the man who deliberately planned to be late, and almost as much to blame. For a man who leaves the possibility of accident and interruption out of account, and stakes the welfare of himself and others on such miscalculation, is neither wise nor just; he is reckless rather than brave. Even if accidents do not come, he is walking on the perilous edge all the time; his work is done in a fever of haste and anxiety, injurious alike to the quality of the work and the health of the worker.

The man who puts the courage of punctuality into his work will draw the line for finishing a piece of work a safe period inside the time when it is actually due. If one forms the habit and sticks to it, it is no harder to have work done ten days, or at least one day, ahead of time than to finish it at the last allowable moment. Then, if anything happens, it does no harm. This habit will save literary workers an incalculable amount of anxiety and worry. And it is the wear and tear of worry and hurry, not the amount of calm, quiet work, that kills such men before their time.<sup>1</sup>

<sup>1</sup> Hyde, "The College Man and the College Woman." Reprinted by permission of Houghton Mifflin Company.

## CHAPTER IV

### THE LOGICAL OUTLINE

THAT a piece of prose should be logically connected sentence by sentence is not the whole requirement. We think, in the ordinary sense of the term, whenever our ideas succeed one another in any rational, definite relations, when the individual steps in the process are in accord with some familiar connection of thought. In the deeper sense, however, no thinking is efficient unless logic governs, not only its parts, but its whole extent. It must be, from beginning to end, adapted to produce the result that the thinker desires; it must be from beginning to end in some sense a unit. We need to consider, therefore, not only the logic of connection, but the logic of the outline.

The logic of the outline is often complex, and difficult to state in a simple and general form. This, however, should not be the case with brief trains of thought, and is frequently not the case with effective ones. Simplicity of plan is often of prime importance, particularly in speech; and we shall usually find that compositions which strike us as clear, well-arranged, and well-knit have as their fundamental principle some one of the five mental connections of thought already studied. They may be concerned, for instance, in comparing two individuals or plans, in giving reasons for a statement, or in illustrating a point. Makers of rhetorics have taken advantage of this fact to subdivide all writing, according to the principle behind its outline, into the four groups of description,

narration, argument, and exposition. These are difficult to define in theory and impossible to keep separate in practice; and the choice among them was never any part of a literary worker's troubles. One can imagine an engineer, put in charge of construction work for a railroad, who should say to himself, "I have heard that suspension bridges are interesting structures, but never had the good luck to build one. I am resolved, therefore, that my work during March and April shall illustrate this type of construction." We should be disposed to advise him to find out where the road was going, then look at the lay of the land, and build in each spot accordingly. Such a man, with his recollection of school theory, would be starting at entirely the wrong end of his problem. Precisely so it is with any student who sets to work to fill in an empty logical outline with ideas.

Such, however, is the style of work usually required of beginners in composition. When they are allowed to graduate from narrative and description, an attempt is made to pin down their wandering speculations to a single relation of thought. They are asked, perhaps, to contrast Cæsar and Napoleon; or to set down all the reasons that occur to them why a public school is inferior to a private. The latter sort of outline is elaborated later into what the dialect of law and argumentation calls a "brief." It represents the relation of reason and conclusion. The relation of whole and part, in particular, is especially well fitted to hold together short pieces of writing which deal with the exposition of ideas. In elementary courses in composition, therefore, this relation is commonly recommended to the student, under the name, usually, of the principle of unity.

The principle of unity, as frequently misunderstood by beginners, is supposed to have the following significance:

if you determine the subject on which you are to write, and then write of nothing else, you may rest assured of producing an efficient sequence of thought. Guided by this half-light, the student sets forth, and presently stumbles into one form or another of logical nonsense. His mistakes are so characteristic and so general that if in writing we avoid them all we may consider that, for beginners, we have a sufficient mastery of the outline of thought.

One who has failed to think out his subject clearly, or whose mind naturally lacks order, often turns out his work by a process of addition. As ideas are suggested to him he sets them down; he merely shakes them out on paper in any order in which they come uppermost. They all bear more or less on the subject, but they lack organization. Perhaps there is among them a leading thought which the thinker himself has not recognized; then, as they all struggle together in a mob, sooner or later the dominant idea in some measure subdues the rest. So the reader, as he looks on, can at last discern the main point. Exercise 2 of this chapter gives an example of what may be called the struggling idea.

Possibly, however, the thinker has in reality no purpose of his own and no reason for writing. His thoughts are, perhaps, all borrowed, all strange, and to him all equally unattractive. Then, in place of making progress, his outline is discovered to go round and round upon itself. This structure is likely to be illustrated in the work of one who sets out with the intention of covering the whole of a particular subject, merely touching on the main points. In such a case the ideas are not connected in sequence, but parallel. Though they all lead back to the subject, no one develops another or depends upon it. Consequently the sentences in which they are expressed, once



cut apart with the shears, may be fitted together in any other order whatsoever, without loss of effect. When this structure of thought is adopted from lack of time or space for a more detailed development, it is legitimate. With beginners, however, it usually points to the absence of definite ideas and to stupidity in the choice of an unsuitable subject. The writer has been thinking merely of a title. He has got so far as to see that somewhat might be said on this point, and on that too general assurance has set forth. Unfortunately, however, the thing which might be said has not been given him, and his work can have no development, because it has had no aim. The thought does not present itself to the reader as a single mental process. Exercise 1 of this chapter shows an example of the interchangeable order.

Neither of the orders illustrated above is likely to help on materially the progress of thought. The mastery of ideas is not attained till they have been seen in their lowest terms. Then the real relations are evident and one or at most a few stand out as dominant. Round these the others are grouped. They hold together naturally, as a man may carry many parcels, provided he attaches them all to one string. Details, unattached, are next to impossible to retain. The number of individual ideas which the mind can entertain at one time is strictly limited. As the result of an hour's talk or a half-hour's reading, one may hope to acquire and retain not over three or four distinct, main notions. If it so happen that these are the leading ideas of the discourse, then the connecting thread is secure. As for the details, so long as they are firmly tied to these central thoughts, the more the merrier. Thus disposed, they add to the weight of the idea, without increasing the difficulty of handling it.

This subordination of details may be achieved by

deliberate art; or it may often be attained without special effort through the possession of a purpose. Here, then, the lesson is the same as that of the preceding chapter. He who knows why he speaks or writes is assured of having reduced his ideas to the lowest terms, for he sees them in the light of a single aim. The test question in beginning a series of ideas is not, "What shall I say?" or even, "What do I think?" but, "What do I wish to do?" Clear definition of one's object at the outset is half the battle. A writer who knows what he wished to do with thoughts can hardly suffer from confusion; his purpose will go far to determine the selection, the arrangement, and the expression of every idea. Neither can such a mind be poor in material. Since all thought is related and every idea bears on every other, the power to develop a subject copiously is largely the power to see its connections; and the mind that is animated with a purpose sufficiently strong sees everything in the light of its central idea. Thus the mastery of thought depends, like the mastery of other things, on the possession of a purpose clearly conceived and firmly held. The unifying force behind all thinking is the force of will.

### EXERCISES

1. The student composition which follows is an example of the interchangeable order. Try to determine whether any rearrangement of the ideas would make the composition appear as a continuous process of thought.

A pot should never call a kettle black. It is the custom of many people who have a great many faults always to criticise others. It is a well-known fact that the most grumbling is done by the people who are most at fault. Sometimes people criticise other people for faults which they themselves are addicted

to. Those who have comparatively few faults very seldom are found giving their advice to others. The policy of fault-finding is entirely wrong. People in glass houses should never throw stones.

2. In the following student composition the order is that of the struggling idea. Determine for yourself what appears to be the leading thought, or assume it to be as follows: "All influences will combine at college to make me take my work more seriously." If this is assumed as a central theme, the ideas may then be rearranged and the expression may be improved so as to make everything bear on this thought. In some cases the student will need to supply material from his imagination so as to make the rewritten form more full and definite. The following outline is suggested for use in the revision. The numbers in the composition were inserted merely for convenience of use in connection with this outline.

*Influences Tending to Make my Work More Serious*

A more definite aim (1).

Differences in the social life (9, 6, 7, 8).

An increased realization of the value of the instruction (5, 10).

A change in the subjects taught (2).

Differences in methods of instruction (3, 11).

A difference in attitude toward my work (4, 12).

HIGH SCHOOL AND COLLEGE

(1) Probably the greatest difference between my life at college and my life at the preparatory school will be the fact that I shall now have a different aim in view. While I was at high school, my aim was simply to prepare to meet the entrance examinations. My aim now is to learn a profession. (2) The subjects of study at college, while they will not differ

much during the first year or so from the subjects taught at high school, will probably differ very much in the following years. (3) The subjects will probably be taught in a different way, (4) and I shall learn them more thoroughly and put more time into them. (5) Whereas everything was free at high school, I have to pay for everything at college, and I shall appreciate my subjects of study more. (6) At college my dealings will be with men more advanced in age than at high school. (7) While at high school a fellow has more time to put into athletics than at college. In high school the hours are from nine o'clock until two, while at college they are scattered through the day, from nine o'clock until four or five; thus giving us less time for outdoor life. (8) Everything seems to be of a busier aspect at college than at high school, (9) and, the high school which I attended being in my own neighborhood, I felt more at home. (10) I shall probably have to work to earn part of the cost of my education while at college, as I did not while at high school. (11) Another great difference between college life and that of high school is in the fact that things will not be urged upon me so strongly. If I do not learn my assigned lessons, then I shall consider it more my own loss than I should have done at high school, (12) and, as a great deal depends upon passing the mid-year examinations, it will be necessary that I learn each assigned lesson. I know I have to pass certain examinations to get my degree, while less depends upon examinations in getting a diploma from high school.

What relation of thought is mainly employed throughout the preceding composition? If a single relation of thought is dominant throughout, why is there no continuous line of thought?

What relation of thought dominates the form rewritten according to the outline suggested above?

3. The purpose of the following editorial, so far as it may be said to have had any purpose, was to avoid giving offense. Recast it with a view (1) of excusing the action

of the fire department and (2) of throwing blame on the department. Then compare the orders of ideas in the three forms. The following key sentences are suggested as a help in the revision.

Though the legal responsibility rests with the corporation, who have a prompt service in such cases, yet the firemen are trained to get to work as early as possible. Only a short time ago the corporation service was notably inefficient; and, after all, the danger from prompt action is small, for men are seldom killed by contact with a live trolley wire.

The firemen were hasty, for, though there is little danger from a live wire and they are trained to get to work as quickly as possible, it is better to wait for the corporation, on whom the legal responsibility rests. They used to be slow, but are now prompt and efficient.

#### A SENSATIONAL FIRE

For a small fire the blaze on Chauncy street last night developed some quite sensational features. The force first on the ground cut the trolley wire, which was an obstacle to the elevation of the aerial ladders, and high jinks followed. The chief of the department, arriving at almost that instant, received a severe but probably not a serious shock from the released electrical diablerie. Perhaps the prompt action on the part of the firemen in taking such a summary method of removing an obstacle was unnecessary. There was a time when it was difficult to get timely expert assistance in such an emergency. At the Hecht fire, seven years ago, it was as much as three hours before the employees of the West End Road were able to shut off the current from the system in that vicinity, and in the meantime a writhing mass of live wires was spreading demoralization on all sides and seriously interfering with the working of some of the more important apparatus.

But this has now been changed. The emergency corps of

the Boston Elevated Road is prompt, and knows how to do its work without danger to those below. At about every five hundred feet there are switches by which the current can be shut off, rendering the wires harmless. Too much blame should not be attached to the firemen who cut the wire. Their predominating impulse is to get to work as soon as possible. But it would be more prudent to await the action of the corporation in all such cases. It is there that the responsibility belongs, and it is there that it can be easily placed if the danger is not promptly removed. There is little danger, however, of human fatality by mere contact with a live trolley wire. There is no well-authenticated case of death due to that cause in this city.

4. The following student composition proves on analysis to be:

(a) An argument from the definition of art and an analogy or argument from resemblance, both tending to show that it takes time to learn to study (first paragraph).

(b) A portion of an exposition of how to learn to study (first part of second paragraph).

(c) A second argument from resemblance, tending to show that study, with proper training, will become a pleasure.

Which idea would it be best to develop? Is there any one which could be made to include the other two, so that the whole of the present substance might be saved and yet treated as a single line of thought?

#### HOW TO STUDY PROPERLY

Studying may well be considered as an art, and to be able to study properly one must be skilled in that art. This necessarily takes time, and — what is fully as important — practice. A billiard player does not become proficient in a week or even in a month. It takes years of practice for him to become

expert. And as he slowly gains experience the use of his art becomes a second nature to him. This is also true of studying.

We often hear the statement made that the child is father to the man, and it is undoubtedly true. But a child does not study. Any kind of restraint is irksome to him. Therefore before he can learn to study he must learn to be regular in his play. This done, it is a simple matter to teach him to devote a part of his time to study, and as he grows older it becomes his second nature. He is now in the same stage of development as the billiard player. He has become skilled and enjoys his work. He is also aiming at some goal, and everything that tends to help him along is looked upon as a pleasure, and he has at last learned to study properly.

This goal can be reached only by long practice and proper training. The football player does not enjoy the first few practice days, but when he has learned the game and its possibilities, he is always eager for it. The same is true of studying.

5. What is the thought relation which governs the whole of the following extract?

College life is artificially simple. With the single exception of club life, it is the narrowest life a man can live. The great realities that condition life in the outside world — the care of the aged, the rearing of the young, the struggle for daily bread, the strain of business, the stress of politics, the weight of professional and administrative responsibility — are either entirely absent or present only in artificial miniature. Welcome checks for the wealthy, generous scholarships for those whose fortune is chiefly their own talent and industry, eliminate the fierce struggle for existence from the charmed circle of undergraduate life. The absence of the fair sex removes at least to a distance the chief source of emotional interest in real life. Where men touch each other only at a few points, such as social intercourse, class, college, and society politics, college publications, and athletics, the man who can't pass muster on these easy terms must be a hopeless case. With health, wealth, youth, leisure,

choice companionship, regular and inspiring but not too difficult tasks, and the enthusiasm of great contests, all provided and thrown into his lap, a man may indeed be dull, selfish, censorious, conceited, cowardly, contemptible. But if he is, sharp eyes are swift to detect and punish him. He is speedily dubbed a "dope" or a "stiff" or a "tripe" or a "berry," or some other of the grotesque, slangy terms, more forcible than elegant, by which college students brand the fellows who are sleepy and tactless, irritable and complaining, self-centred and treacherous.<sup>1</sup>

<sup>1</sup> Hyde, "The College Man and the College Woman." Reprinted by permission of Houghton Mifflin Company.



## PART II

### THE MEANING OF STATEMENTS

IN Part II we turn from the order in which thoughts are expressed to a study of what may be called the efficiency of mental processes. There are in the very nature of thinking certain limitations which prevent it from doing full justice to the world about which we think. Ideas, that is to say, are most serviceable when they are exactly defined, sharply distinguished from other ideas, and constant to one form. Existing things, on the other hand, show precisely the opposite of all these requirements. They are not capable of full description in words, they run into one another indistinguishably, and they are always changing. Thus a person who sets out to think cannot be too frequently reminded of the necessarily rough and approximate nature of the work he is likely to do. Again, these differences between ideas and things are constantly leading the untrained thinker into difficulties that he might avoid. Sometimes he uses a wide and general thought when he could be better served with one more definite. He employs ideas based on his own tastes and preferences and does not understand that others have a perfect right to define them differently. He takes notions derived from comparison of a large class of objects and uses them as though they referred only to the cases he has observed. In all these connections and many others the average thinker shows little sense of the true relation between words and things.

Chapter I explains the fluid and indefinite nature of the material furnished us for thought and shows how, to suit our own convenience, we form it into units. Chapter II deals with the comparison of these units with ideas, a process which results in what is called "facts." In Chapter III facts are classified, according as they depend upon abstract ideas, personal preferences, or notions which cover a class of objects. The next two chapters explain in detail what is implied in the truth that ideas are mental symbols; and they sum up the cautions to be given in the use of such symbols. Finally, in Chapter VI, there is an account of the method of logical division, by which, through the use of many related ideas, the mind attempts to deal comprehensively with all the important aspects of a complex subject.

The exercises in Part II are almost all of a practical nature. Taken together they constitute an attack on the common habit of using words without stopping to consider what they mean. The student is asked, first of all, to write of what he knows and to compare his statements directly with the subjects of his thought. He is directed to distinguish, among all the ideas he uses, those which are supposed to relate to groups of facts. He has some practice in the clear statement of abstract ideas and in the attempt to apply these, in turn, to the observation of particular things. It should follow, if the work has been reasonably successful, that all his life he will be less likely to get carried away with a mere flow of language and more disposed to confine his own talking and writing to occasions when he has some knowledge of the facts.

## CHAPTER I

### THE SUBJECTS OF THOUGHT

CERTAIN grave difficulties confront us in attempting to think about facts. The most obvious of these is the amazing complexity of even the most familiar objects. They have an infinite number of possible relations and qualities. Here, for instance, is a nail, half starting from the floor. It causes me to trip, and I express my judgment about it in a thought, — "This nail is a nuisance." Such, for the moment, is the only aspect in which this individual thing presents itself to me. In other relations, however, and at other times it may present itself in a number of other aspects. The physicist, perhaps, will tell me that it has a relation with the stresses and strains of the building. The student of metallurgy will examine its molecular structure and tell me something of the temperature at which it was cast. The machinist knows the processes of its manufacture. Of the thing as it exists for itself, meanwhile, almost nobody knows anything. We observe that it has certain strange habits and unaccountable likes and dislikes: it is coherent, it rusts, it obeys the laws of gravity. Such is an inadequate attempt to hint at a few of the relations and aspects of one subject of thought. It is perhaps as simple a subject as could be chosen.

What holds true of simple individual objects is perhaps more evident, though certainly not more striking, in a wider view of the matters about which we think. Even

leaving out of count the suggestions of the other senses and of what we call the feelings, a sharp attention is required in dealing with the picture presented by the eye alone. The student enters the chemical laboratory primarily to see. Here every precaution is taken that may simplify his task. He is told precisely what will happen and what aspects of the event it is worth his while to note; yet, what with the excitement of the moment and the various accidental matters that arise, he too often finds himself, after the reaction, without a single experience that he could swear to. Years of practice are necessary before an observer can be sure of himself, even in the very limited field of action of a test tube. The same straining eagerness and sense of final loss are felt in watching the last tableau of a drama. Here the stage manager, if he understands his work, has arranged a significant group; the position of every actor, the expression of every face contributes largely to the general effect, and the whole is to pass, on the fall of the curtain, with something of the fleetness of real events. In face of such a situation the interested spectator sits embarrassed. Some selection must obviously be made; the whole is beyond the compass of a brain. So it is, not only with the facts of vision, but with all other experiences and with the inner complexity of ideas; we cannot express them, we cannot hope to know them entire. In that direction the progress of logic is hopelessly blocked.

In dealing mentally with this complex world of real conditions our aim, comprehensively stated, is to simplify. This we accomplish by viewing all that lies about us as an association of units, or individuals, more or less independent and producing effects upon one another. When the differences by which we distinguish these units relate to position, the mind is led to think in terms of numbers

and to engage in other forms of purely mathematical reasoning. When the differences relate to qualities, the resulting notion is that of individuality. The method of thinking in numbered units is already sufficiently familiar. Individual units, too, we find everywhere. Such, for instance, are the common objects which are presented to us through the sense of sight, — an animal, a plant from roots to leaves, a mountain, a field surrounded with a hedge, the human body. Where the eyes give no hint of how much shall be included in the unit, the mind attacks the problem alone and produces abstract individuals, sometimes by analysis, sometimes by grouping. A child who trusts you will accept a remark of yours as a simple fact, like the presence of a tree in the garden; but the sophisticated grown person who overhears the same remark may analyze the fact. He distinguishes the words from the meaning; he thinks of the connection in which they were spoken, and of their purpose. Thus out of one unit his mind has created four. These four may be employed separately in his thinking, as individual subjects of thought. They are "abstract" individuals, taken away or "abstracted" by analysis from the whole to which they belonged. Again the observer looks upon a flock of sheep. He thinks of them first in the relation of difference of position, — one here, one there, a number. Then he notes the relation of resemblance. One is clearly like another. Since they are in some respects alike, they may conveniently be considered together as one, a flock. Thus the mind by grouping forms another abstract individual, which in this case also is not so much an existing fact as a mental fiction, an idea.

These units of which we think, however they may be formed, must fall under the general definition of unity laid down in elementary mathematics, — they are mere

arbitrary divisions, all capable of being again divided at the pleasure of thought into smaller divisions, or combined into larger. This fact is evident enough with the flock of sheep; it is fairly plain in the case of inanimate objects, for we daily see that they are broken up and that their parts are recombined at the will of man: but with a moment's thought it is easy to see that all units have the same quality. Off-hand, for instance, there is nothing which seems more certainly and indisputably a unit than the self. A man's "I" is one thing, and there's an end of it. On reflection, however, it is found to be formed of at least two quite distinct units, his thoughts, his mental self, and his feelings, his physical self. Or, to be still more exact, these two units are merely possessions of the "I"; any part of them may be got rid of and yet the "I" will be left intact. So, finally, the personality in its simplest sense comes to seem like a mere peg on which to hang thoughts and feelings, a kind of geometric point of the mind. How much we hang on the peg will be a matter of momentary convenience. Thought may deal with the "I" as a bare zero, or it may add to this abstraction whatever connected things it chooses from the whole inner and outer world.

Again, suppose we speak of the Republican party. Careless thinkers deal with this idea as an indivisible unit. They move it round in their brains as though all its parts were as solidly knit as an ivory chessman. A thoughtful person, however, has no sooner used the term in making a statement than he begins to feel that perhaps it needs closer analysis. The party platform and literature are one thing, the "practical politics" quite another. Historically, too, the idea falls apart: Republicanism under Blaine was not the same as Republicanism under Roosevelt. Thus the lesson becomes immediately evident:

this unit is held together, like any other unit, only by the power of thought. It is an arrangement which the mind makes, quite arbitrarily, to help it in disposing, more quickly or more effectively, of a group of facts.

So much, then, for the first step in the problem of simplifying mental material. The mind looks out upon the very complex spectacle of reality and asks, "Where is the particular portion of all this with which we are now to deal? How much of all that lies before us shall we consider at one time?" and the answer is found in the more or less arbitrary choice of an individual unit. The unit becomes the subject of thought.

#### EXERCISES

1. Attempt a narrative which shall cover as much as possible of what happens in a brief period, say three minutes, of your life. Choose some recent period which you happen to remember, rather than one specially prepared. First describe in the order of events, then according to some classification, as thoughts, feelings, things seen, etc. Consider in each case how much escapes description, and why.

2. Consider some simple object, as a chalk box. Adopt a convenient point of view and give a full oral description of it as it thus appears. From closer study explain the degree of inaccuracy involved in what you have said of its color and its shape.

3. Is the story in Exercise 1, Part I, Chapter II, a comprehensive account of the writer's experiences during the time it covers? Consider in what parts and how fully he represents the thoughts and feelings communicated to him by (a) the weather, (b) his clothing, (c) the scenery, (d) the footing, (e) the weight and position of the gun, and (f) ideas brought to his mind through association.

## CHAPTER II

### OBSERVATION AND RESULTING STATEMENTS ABOUT FACTS

WHEN the mind has selected or formed the unit about which it is to think, it proceeds next to the discovery of what are called the "facts" about the unit. For this process common speech already furnishes a familiar term, — the word "observation." The observer is one who examines carefully and with a purpose. There is in his mind a clearly defined notion of something which he seeks; and his task is, by whatever experiments may be necessary, to inquire whether this something is present in the subject he is observing.

In attempting to illustrate the essential nature of this process we may analyze two or three common instances of observation. The simplest cases, and the most fundamental, are drawn from the physical world. There are plenty of facts of a purely mental sort. It is a fact, for instance, that two and two make four, or that in the presence of certain people we feel a sense of irritation. At the same time the material for thinking processes is originally furnished, we must assume, through the senses. They give us evidence of conditions in the outside world, what we call the "real." So we may begin the study of observation with a case in which the senses plainly bear a part.

Let it be supposed that Farmer Brown, driving in the dusk along a country turnpike, finds that his horse shies at some object beside the road. Being of an inquisitive



nature, he gets out of his wagon to determine what this object may be. The problem which he sets himself involves, of course, merely one of the simple thinking processes of daily life, and at first appears to have no bearing on science or logic. At the same time it is not essentially different from the work of the analytical chemist or of the engineer who tests materials, for the purpose which animates all these activities is, when simply stated, only the desire to get nearer to facts in order to determine what they resemble. Closer inspection, however, shows that it is possible to divide Farmer Brown's observation into two steps.

(a) At some point in his preliminary survey of the subject he catches a hint which suggests to his mind an idea. He exclaims to himself, "It is a white stone," or, "It is a piece of paper." Being a farmer, Mr. Brown, if he reflects upon this idea at all, will call it a "guess." If he were a scientist he would in a parallel case call it an hypothesis. The main point is that, whatever its name, it furnishes something to go upon, some hint as to where to look. This is the first stage in observation — the selection of the idea.

(b) After the preliminary guess, if accurate information is required, Farmer Brown moves nearer to the subject, turns it over, passes it between his fingers, and applies what not other experimental tests. His purpose is to examine the thing in the light of what he knows of white stones, or pieces of paper, or whatever other notion he may have formed, and to determine whether the qualities which he has in mind are in any degree represented in this object outside his mind. This is the second step in observation, the comparison of whatever is being observed with the ideas under which one is observing it.

Suppose again that the problem of observation were

to estimate the value of a piece of property for residence. Here likewise it is first necessary to know what needs to be observed. The house-hunter, for instance, before he can go about his search intelligently, must have formed in his mind more or less distinctly either a notion of what he wants or a conception of the qualities which in general affect the value of a residence. This does for him the same sort of work as the guess or hypothesis does for Farmer Brown, — i.e. it serves as a standard for testing facts, or it tells him in what direction to look for detailed information.

Finally, suppose that we are attempting to observe the straight line from  $a$  to  $b$ . In this case again the first question that arises concerns the choice of ideas to be employed. How is the line to be measured? Is it to be considered as a line in a mechanical drawing? Then it will be essential to note the general character of the line, whether solid or broken, the width, and the exact points of application at  $a$  and  $b$ . If, on the other hand, the actual line  $ab$  is to be understood as a mere graphical representation of the shortest distance between  $a$  and  $b$ , then it remains only to inquire whether the observation required relates to direction or to length, and finally, after the adoption of a suitable standard of measurement, as the degree, the inch, or the foot, to compare the fact to be observed with this standard.

Such are three examples of observation, taken almost at random, two of them from daily life and one from elementary science. Though simple cases, they fairly represent the general character of such processes of thought and may be taken as typical of the whole. The main lesson to be drawn from them is that observation is essentially the comparison of things with ideas. It is the study of subjects of thought, with the aid of the senses and under points of view suggested by certain ideas,

which thus in a broad sense serve as standards of comparison. The real situation is compared with a set of qualities, more or less clearly held in mind, in order to determine how it measures against them. The result of this comparison, stated in words, is what we usually mean when we employ the term "fact."

The material for thinking processes is, then, not the outside world itself, but the result of countless comparisons of the world with ideas. What these comparisons tell us will depend very largely upon the ideas which dominated our observation. The world of reality appears before us like a witness cross-examined by a badgering lawyer. It must give truthful replies to all the questions that we ask, but aside from that is forced to be dumb. No matter how rich in interest the situation may be, we shall gather knowledge of it only within the limits prescribed by the ideas within our minds. The competent observer, then, requires first of all a mind neither dull nor one-sided, but awake to all phases of existence. For the higher sorts of observation, for invention and discovery, this alertness means breadth of interest. One whose interests are narrow cares only for his profession; he concerns himself only with what is already known to be useful to men of his trade. Outside this range lies the world of what now appear unimportant ideas, and somewhere in that world, waiting to be observed, is the next important discovery. It can reveal itself only to one who watches events with a universal curiosity to which every detail is of importance.

To this interest in new things the trained observer needs to add the widest possible knowledge of what is already known. Practice and study, professional experience store his mind with points of view for observation. He knows how to take hold of new problems, what particulars must be observed, and what may be neglected. From

this knowledge of similar things he anticipates events and is ready for them. If a boy of average high-school age is asked to give an account of the town in which he lives, he may mention some details of the social life among the younger people, the nearness to ponds and trout streams, the number of schools, and the like; but hardly of the cost of provisions or the working of political parties. One set of facts may be as accessible to him as the other, but, though the one is easily picked up, the other remains totally hidden. While the necessities of life seem to grow on trees, a boy will never dream that in learning about a town it is essential to hear of the nearness of markets and the price of foods. These facts cannot fit themselves into his system of knowledge because they do not feel themselves welcome and at home among their kind. In the same way a layman sent out to observe an engine stands before a meaningless confusion of small parts. The practical engineer knows the name and function of each. Though as individual pieces of mechanism they are new to him, he has stored in mind a clear ideal of what they should be. For him the work of observation is merely the general task of all acquirement of facts, — the measurement of new things against standards derived from things familiar.

### EXERCISES

1. Study your ability to observe and to record your observations in connection with the following range of subjects. Note particularly what are the reasons for the limits of your power in each case.

The façade of a large building; a gown in a show window; a city street; a simple mechanical construction, like the central chandelier of a church; general atmospheric tints and their effect on the colors of natural objects or buildings towards evening.

2. Examine more carefully the façade of some large building. Attempt a rough free-hand sketch of the main lines, especially such as serve to indicate structural divisions. Make notes of the details, and then write a description of the whole.

3. Examine a photograph of a painting or piece of sculpture, making careful notes. A suitable subject is a photograph of the so-called bust of Niccolo da Uzzano ascribed to Donatello. In this case, and in most others, the notes may be taken under the following headings:

SUBJECT	How represented		Profile
	Point of view		Proportions of
	Personality		profile
BODY	Flesh	FOREHEAD	Shape
	Muscular development		Width
	Apparent size		Height
GARMENT	Style	EYEBROWS	Arch
	Arrangement		Height
NECK	Size	EYES	Thickness
	Length		Size
	Muscular development		Distance apart
SKULL	Depth	NOSE	Setting in head
	Breadth		Upper lid
	Height above ears		Eye itself
FACE	Height above eyebrows	MOUTH	Length
	Capacity		Thickness
	General shape		Profile
	Markings on skin	CHIN	Upper lip
	Shape of jaw		Lower lip
	Cheek bones		Curves
	Flesh		General line of opening
			Shape
			Protrusion

Work over the information thus obtained into a description of the appearance of the person represented, omitting all inferences as to his character.

4. Attempt a full report (ten or twelve letter sheets) on a town, neighborhood, summer resort, or street as a place of residence. It is needless to point out that each student should take the place which is most familiar to him. Below is given an incomplete list of points of view intended to be useful in thinking out the subject. It will be evident that not all of them apply to any particular case and that the order in which they are given has nothing to do with the order in which the report is to be written. The student should go over the list carefully, comparing the headings with what he knows of the place he intends to describe, and making notes of the facts desirable to use. He should then rearrange his notes in the best order that occurs to him and write from them, *without further reference to the list of points of view*. The report should be written in continuous prose style, with the usual attention to matters of form.

#### (A) SURROUNDINGS

##### I. *Natural*.

(1) Land: General topography; elevation; exposure; view; nearness to bodies of water or wooded areas; character of these; walks and drives. (2) Products: Hunting and fishing; soil; vegetation; fitness for grazing, etc.; natural water supply. (3) Atmospheric conditions: Climate; rainfall; fog; humidity; healthfulness.

##### II. *Artificial*.

(1) Nearness to centres: Large cities or important towns; markets; nature of these, prices, etc.; schools; postoffice; churches. (2) Means of transportation: Condition of roads; railroad or street railway lines; walking distance of such lines from house; patronage; scheduled time to important points;

regularity; service. (3) Public improvements: Parks, playgrounds; libraries; drainage, water, gas, or electric lighting systems. (4) General social and political character of the whole surrounding district.

### (B) THE PLACE ITSELF

#### I. *Physical Characteristics.*

(1) Houses: Materials; repair; character of, as single, apartment, tenement, etc.; immediate surroundings, as yards, gardens; condition and size of these. (2) Streets: Arrangement; surface; shade trees; overhead wires; tracks; cleanliness; driving; heavy teaming; foot travel.

#### II. *Social Characteristics.*

(1) Social: Nationality; size of families; "social" sets and organizations; number of young people; of children; sports and recreations; street life; treatment of strangers. (2) Economic: Occupations; business or manufacturing interests near by; earnings; wealth; scale of expenditure. (3) Political: Party in control locally; character of men in office; effect of their management on the life of the immediate neighborhood. (4) Religious: Church buildings; denominations; membership; activity; moral standard of the community. (5) Intellectual: Schools and schooling; interest in music, art, literature; clubs and plans for social improvement; intelligence of the people.

5. The following is an instructive list of headings drawn from a consulting engineer's report on the value of an electric light plant. Note the detail and its bearing on the value of the business.

#### *Incorporation:*

State  
Date of organization  
Bonds and redemption  
Sinking fund  
Stock

#### *Franchises:*

Use of streets  
Special regulations  
Time limit

#### *City contract:*

Time of renewal

Number of lamps and price	Valves
Provisions for extension	Heaters
Requirement as to underground wires	Pumps
Price versus cost	Condensers
Right of arbitration	<i>Engines:</i>
Possibility of municipal plant	Style
	Size
	Number
<i>Street railway contracts:</i>	<i>Belting and shafting:</i>
Companies involved	How connected
Amount and kind of current	Thickness of belts
Cost	Nature of shafting
Price versus cost	Pulleys
<i>Land and location:</i>	Clutches
Position and extent	<i>Foundations</i>
Water supply	<i>Dynamos</i>
<i>Buildings:</i>	<i>Switch boards</i>
Materials	<i>Lines:</i>
Construction	Wood in poles
Arrangement	Painting
Condition	Repair
Chimney	Total length of circuits
<i>Boilers:</i>	Subdivisions of circuits:
Number	Arc circuits
Make	Incandescent circuits
Dimensions	Power circuits
Pressure	<i>Metres</i>
Horse-power	<i>Transformers</i>
Feed pumps	<i>Lamps:</i>
<i>Rates:</i>	Direct arc
Cost	Alternating arc
Discount	Incandescent
Restrictions	Street fixtures
<i>Valuation (itemized)</i>	<i>Stock on hand</i>
<i>Piping:</i>	<i>Tramway for coal hauling:</i>
Condition	Distance
Amount	Handling at boilers



<i>Tramway for coal hauling:</i>	Changes in equipment
Rolling stock	Economy of operation
Track	Condition of accounts
Suspension	Future of the city
Cost of coal	Chance of competition
<i>General opinion:</i>	Real valuation versus bonds
Opportunity for extension	Earnings
Loss in lines	Probable profit for the year
Opening for new business	

6. Students who have the requisite knowledge should attempt a similar, but of course briefer and more informal, report on any small business with which they are acquainted. It is understood that the amount of knowledge is likely to be small, unless it can be supplemented through talks with older people. The value of such exercises, however, lies not in their length, but in the serious work required to write even a little, and in the increased knowledge of one's own mental range. The subject must be always some actual business, treated with fidelity to fact, though not necessarily with mention of the names and places. Suitable subjects are such as the following: A newspaper route; a retail grocery business; a small manufacturing establishment or machine shop; a summer hotel; a country newspaper; a garage; the equipment and finances of a small private school or academy.

## CHAPTER III

### THE IDEAS EMPLOYED IN OBSERVATION

SINCE statements of fact are obtained through an examination of things in the light of ideas, the degree of accuracy reached will depend in part upon the observer's sense powers and the use which he makes of them. If one man asserts that the shield was of silver and another is equally certain that it was of gold, the difference of opinion may be due to color blindness, to lack of attention, or to point of view. Thus, much depends upon the senses; but at the same time much depends also upon the mind. The credulous observer may often believe that he has had an experience, as he would contract an infectious disease, merely because he firmly expected to have it. Such a person, sent out to view the façade of a church, reports that the cross is gilded, when in reality it is of stone. "Churches usually have gilt crosses," says he to himself, and troubles no further to look. This difficulty is the more likely to beset him in proportion as the thing he expects to see is either greatly dreaded or greatly desired, for then the idea looms so large in the mind that it goes far to shut out the comparison entirely.

Again, even when the comparison actually gets made, its value depends pretty largely on the exactness and clearness of the idea. He who asserts, for instance, that a flower-bed is circular makes a statement easily verifiable, for the idea he uses in comparison has been defined in the science of geometry. If, however, he calls the flower-bed

"effective," he touches on a personal notion of beauty and opens the way to endless dispute. Considered from the point of view of clearness of meaning, ideas may be roughly divided into three sorts: general ideas, pure ideas, and ideals.

1. *General Ideas.* Farmer Brown, whose case was referred to in the preceding chapter, observes on the basis of a general idea, — "a piece of paper." This idea stands for a number of individual objects, whose place it takes in the realm of clear thinking. It is made up, in theory at least, of a group of qualities, which may be thought of as so chosen that all individual things known to be pieces of paper will have these qualities, and no more than these, in common. General ideas are of such frequent occurrence that they may almost be spoken of as the staple material of thought. Such are, in fact, the notions conveyed by the greater part of our ordinary vocabulary, — such terms as indicate the objects of the senses — "horse," "person," "county fair," "landscape" — and the various distinctions applied to human life — "Democrat," "working man," "college student," "friend," and so on.

Some general ideas have been drawn into the vocabulary of the special sciences and may be found somewhat clearly defined in the form of what are called the scientific classes. A student of zoölogy, for instance, can explain precisely the qualities which are common to all the animals known as mollusks, and a lawyer knows exactly what constitutes a tort. For the most part, however, and except for a few scientists, who make a nice use of terms related to their own subjects, general ideas are sharply defined in theory only. In practice, on the contrary, it usually happens that, though we use the names in common, the ideas which they suggest are based for each thinker, not on the common qualities of the whole class, but on the

most striking characteristics of the few individuals that he happens to have met. On the whole, but few of the general ideas employed in common discourse have been defined, by those who use them, through a wide knowledge of really representative cases. This fact we shall study further in Chapter V.

2. *Pure Ideas.* A few of the conceptions which are used in ordinary thinking have been defined in a way to make them independent of the world of the senses. They establish themselves directly in the mind, and therefore need not rely wholly on illustrations furnished by facts. This type of idea is met in philosophy, but is best illustrated in the sciences of pure mathematics. Here there is no attempt to treat the actual world as we find it. The mathematical notions of a straight line, a point, and a surface are intended to represent, not facts, but only certain aspects of the physical world carried out to the limit in thought. No body can, by polishing, be given an absolute surface; in the most carefully ground steel plate a powerful microscope will still reveal hollows and depressions. In the same way all the other conceptions of elementary mathematics are idealized. They select merely those aspects of bodies which are useful in the theory of measurement, and then perfect these for the purpose of thought. These ideas, though they took rise in some hint given to the mind by objects, are capable of being perfected thus because they can be explained in terms of other more inclusive ideas; and these in turn, like the conceptions of free movability and of a geometric point when used in defining a surface, have been defined without reference to things or events. They are mere definitions explaining the relations of ideas, or else self-evident truths.

3. *Ideals.* There is, finally, a third class of ideas which,

to indicate that they are based largely on individual taste, we may call ideals. These it is which lie at the back of judgments about what is pleasant or painful, desirable or undesirable, and even, in a sense, about what is right or wrong. A young boy, not too carefully trained, becomes a member of a corner gang and spends his Sunday standing in the doorway of a store. He is having "a good time." Later, perhaps, at the high-school stage, he dresses in his best and occupies himself in a round of calls. Finally, with the seriousness of approaching age, he becomes interested, let us say, in the study of electricity and finds the day more pleasing when spent in his amateur laboratory over the construction of a device for utilizing current. So every age has its notions of the good. With regard to such matters there is, for the wise man, no disputing. In some degree, to be sure, one's ideals are derived from facts, for they are determined partly by the extent of one's knowledge. Low standards are often due to the lack of experience with other things. At the same time, in spite of this partial connection with experience, the formation of ideals is so closely dependent upon the personality that it often seems like a question wholly of personal taste.

Yet, even if one's beliefs as to the beautiful and the good rested wholly on personality, it would be unnatural not to attempt to justify them by reference to principles. Thus there comes a stage when ideals pass out from under personal auspices and pose as theories of what ought to be true for all men. Reasoning based on ideals of this sort makes up the greater part of what men commonly refer to as "theory." What is the proper scope of the insurance business? Is capital punishment justifiable? What is true religion? Ought the technical school to incline towards theory or towards practice? He who

discusses weighty matters of this sort attempts to justify his views by referring them to larger principles, self-evident propositions of common sense or of reason. Since the bitterest controversies known to history have arisen over just such questions, there is some reason for supposing that, even when they appear impersonal, ideals are still largely based on personal preferences.

It goes almost without saying that the three classes of ideas referred to above, though sharply distinguished for the mind, yet in the real cases shade into one another with considerable indefiniteness. To begin with, a single word may serve for any number of different ideas. When, for instance, one speaks of education, the idea back of the word may cover one's own experience, the school systems of America, all formal courses of study, all study, even if self-directed, or the essential element in the mental training which results. These are all general ideas; but they differ widely in the number and character of the individuals that they include. Again one may refer to those ideal results upon mind and character which under the present system are nowhere attained, and indeed would be in their perfection unattainable, on account of the relatively low development of the race. Such a conception is an ideal.

Aside, however, from the use of one word in several meanings, there is often a real indefiniteness in the character of the ideas themselves. General ideas, particularly in the natural sciences, are capable of a degree of exactness which relates them closely to pure ideas; and pure ideas in their turn are in most cases originally suggested by the familiar qualities of some class of objects. Ideals, likewise, in proportion as the attempt is made to ground them on general principles, take on something of the authority of pure ideas. Still this indefiniteness of distinction need

not confuse us as to the main lesson to be derived from the study of ideas. This is, in a word, that in observation we employ, broadly speaking, three sorts of standards: conceptions of the general qualities of objects or events; clearly outlined notions derived from thought; and ideals of worth or value.

### EXERCISES

1. In the following paragraphs distinguish the statements based on ideals, the pure matters of opinion, from the statements based on general ideas, and test the latter to determine what would be the difficulty of verifying them.

In the square bounded by M— Avenue, A—, B—, and C— Streets the last generation has seen many changes. Thirty years ago it was inhabited by the solid families of the town. Men who had made money in trade during the Civil War had built costly houses there. The squares were maintained as parks, the streets were clean, the air was fresh and wholesome. Gradually "down town" has here encroached upon a once fashionable district. The older people in many cases stayed on, and the house was kept as long as they lived. Some few such houses remain, but not many. In all cases, as soon as the last member of the older generation died, the home was broken up. The well-to-do moved to more fashionable districts; others disappeared.

In these families the second generation, the boys and young men of thirty years ago, was generally unsuccessful. Among the hundred such that I know, not ten have proved economically worth their salt. They were brought up in luxury, usually college-bred, untrained for business. They seldom acquired the habit of work; oftenest fell into dissipation. This left the girls of the set without proper chances to marry. They must either risk shipwreck with the men with whom they had been brought up, or marry outside their circle, more successful men

perhaps, but less congenial. Aside from the danger of shipwreck, marriage for women of their education was, as for the better sort it remains, a question not of calculation, but of feeling. For the most part they remained single. Some few, rather late in life, married widowers of the older generation, and went in as mistress of a house where there were "girls" with whom approximately they might have gone to school.

2. Note the confusion which is introduced into the following arguments through failure to attend to the difference between what ought to be and what is.

(a) (From an argument on the benefits of the elective system.) By means of the elective system a man may better prepare himself for his own special end, taking only subjects which apply to it. Almost every man going to college must specialize slightly, at least. Look at a college where subjects range from geology to philosophy, and from mathematics to Bible literature. A man must pick some object, and the elective system helps him to carry his line of study further than the prescribed system.

(b) The principle of unity does not apply to letter writing so strongly as it does to theme writing. A theme is usually written with the idea of impressing someone with the importance of some subject or interesting someone, and so to make it forcible the writer must make it condensed and to the point.

In letter writing it is different. Some people write letters more from necessity than from anything else. They write because they think this or that letter should not go unanswered, and so, since their main object is to get the letter written, they do not need to try to keep to the same subject; but can put down anything that comes to mind.

(c) Military drill is one of the most interesting subjects taken up at the school. A pupil who adapts himself to the different movements of a body of men rapidly will generally like the subject and strive for office. If every man would look forward to holding an office, the work would be found much



lighter and the drill would be much finer. To accomplish the best work it is necessary for each man to do his best and to feel that he is working in a good cause. Thus far the freshmen have taken hold of the drill with much more vim than usual; and, if this continues, I feel that the result will be one of the best drilled battalions in the state.

3. Attempt to give a detailed account of your ideal of the highest form of school spirit. Show, for instance, how it ought to manifest itself in the following directions.

Athletics	Discipline
Other school activities	Attitude of the teachers
Social life and good fellowship	School customs and traditions
Attention to school work	

4. With the above ideal in view, draw up a report on the state of school spirit in your own school, being careful, so far as possible, to base every statement on observation. Where this is out of the question, state carefully the source of your impressions.

5. Criticise the following rough and partial statements of ideals to determine how far they are clearly expressed and in what particulars, if any, they seem unreasonable.

(a) I have often used the word "training." Now what is training, and what is the peculiar characteristic of the trained mind? Training is the discipline that teaches a man to set labor above whim; to develop the less promising parts of his mind as well as the more promising; to make five talents ten and two five; to see that in his specialty he shall work better and enjoy more for knowing something outside of his specialty; to recognize the connection between present toil and future attainment; so that the hope of future attainment creates pleasure in present toil; to understand that nothing can be mastered without drudgery, and that drudgery in preparation for service is not only respectable but beautiful; to be interested in every study, no

matter how forbidding; to work steadily and resolutely until, through long practice, — and, it may be, after many failures, — he is trusted to do the right thing, or something near it, mechanically, just as the trained pianist instinctively touches the right note.<sup>1</sup>

(b) A third source of influence for and over the freshmen . . . is found in the presence of proctors, or advisers, or monitors who lodge and live in each dormitory. Such resident officers are supposed to be friends to each freshman living in his (sic) hall or on his stairway. But here is the rub, the point of difficulty, in any segregation of freshmen, . . . To get friends of the desired character for these freshmen represents the most serious, — and its seriousness cannot be overestimated, — part of the large and complex problem. To get men of the type which Arnold wanted for his teachers at Rugby, of the type which Mr. Robert wanted forty years ago for his international college at Constantinople, has been, is, and I suppose always will be, a mighty struggle. Men whose intellects are large and rich, but whose hearts are neither gushing nor cold, men who are able to differentiate between a principle and a minor rule, men who have a conscience, but who are not obstinately conscientious, men whose love for truth does not cause them to lose their love for boys, men who are great and strong in character, but who also are sympathetic, men who are a proper combination of both the mother and the father: such men it will be gravely difficult to secure.<sup>2</sup>

(c) In these two books of satire, it is the business of Horace to instruct us how to combat our virtues, to regulate our passions, to follow nature, to give bounds to our desires, to distinguish betwixt truth and falsehood, and betwixt our conception of things and things themselves: to come back from our prejudicate opinions, to understand exactly the principles and motives of all our actions; and to avoid the ridicule, into which

<sup>1</sup> Briggs, "School, College and Character." Reprinted by permission of Houghton Mifflin Company.

<sup>2</sup> Thwing, "The Proposed Charges at Harvard." *North American Review*, 191:441. Reprinted by permission.

all men necessarily fall, who are intoxicated with those notions which they have received from their masters; and which they obstinately retain, without examining whether or no they be founded on right reason.

In a word, he labors to render us happy in relation to ourselves, agreeable and faithful to our friends, and discreet, serviceable, and well-bred in relation to those with whom we are obliged to live and to converse.

DRYDEN, *Essay on Satire*

## CHAPTER IV

### THE LIMITS OF IDEAS

THE ideas by means of which we know and judge things and events may be spoken of as produced by our mental power of abstracting. From a group of similar individuals we separate out the common quality and consider it as an independent subject of thought. Thus a function of one group of men suggests the idea of the teacher, that of another the idea of the student. Similarly a boy, reviewing a series of experiences in school, forms ideas about himself. He comes to think of himself as, say, troublesome to teachers, incapable of mastering languages, athletic, a wise man of the world, and so on. These are mental standards, which he has produced. Their meaning, so far as it becomes definite at all, is determined by the resemblance that has been observed to run through many separate instances.

Some of these standards are simple, others highly compound. Such an idea as that of a man's weight could hardly be narrower or easier to define. This idea, however, may either be thought of independently, or it may be combined with countless other simple ideas to form a wider notion, as when one thinks of one's self as a good football player. Yet, whether simple or compound, ideas have certain necessary limitations. These we are now to study, with a view to determine how they affect our thinking.

Ideas are suggested by actual conditions. Without

blue objects there can be no thought of blueness, and without men teaching no notion of a teacher. Nevertheless an idea is not an existing thing and should not be mistaken for it. Because, for instance, in analyzing our feelings, we separate mental from physical relations, it does not follow that mind and body exist independently, or that they can be separated otherwise than in thought. There is perhaps some person whom we call a friend; but his friendship is after all only a quality which, on a review of some of his acts, we have assigned to him. It cannot be analyzed out of his system and weighed; and it cannot with certainty be depended upon to produce the effects that, in our association of ideas, friendship has been supposed to produce. All ideas, in short, are mental symbols. This truth the student of logic can scarcely emphasize too much. Let it be said, at the expense of paradox, that there are in the real world no teachers and no football players; but merely persons who teach or who play football. The process of mind which conceives ideas does not produce things, but merely views of the relations of things.

As a mental symbol the idea cannot be useful unless it is clear. It must be defined; its limits must be ascertained. Mental clearness, however, means merely separation from other ideas, or, practically speaking, distinction between what is of a certain sort and what is not. In the simplest type of thought, then, the idea comes to seem clear in proportion as it is distinguished from its opposite. Mind is not body, says the inexperienced arguer; black is not white, right is not wrong. He fixes his opponent thus upon what is sometimes called a "dilemma." The case under dispute, he reasons, must be either this or that; and then, disposing of one alternative, he triumphantly confronts you with the other. Such arguments are, in

most cases, wholly misleading. The mental quality of goodness, if clearly defined, does indeed contain no evil; but the same is in no sense true of the degree of the good which is found in existing things and people. The good thing is merely a measurable reality which thought compares with an ideal. The notion of goodness, on the other hand, is, like all other qualities, a standard of the mind. It is no more a part of reality than the system of coördinates used in measurement is part of the measured curve.

An idea sharply distinguished from its opposite is, moreover, by that very fact raised to the superlative degree. Unselfishness in which there is no trace of self could be asserted only of an angel; it mounts at once into the domain of ideals. The same truth holds of any other notion. Suppose, for instance, two persons engaged in attempting to find the true meaning of the word "liberty." They may first refer to political history, to discover in what sense men happen to have used the term. Here they find much that is suggestive, but nothing final; for there have been various ideals, from the right to cast a vote which may not be counted to the most unfettered license. Baffled thus in their historical search, they next turn inward, and each expresses to the other his own dreams and conceptions of true freedom. The resulting definition, if one be found, was suggested in part by a study of actual occurrences; but its chief boast is its independence of all facts. It undertakes to teach the world something, and usually of conditions deemed higher than the reality, and more pure.

The statements of fact obtained by the use of ideas thus sharply defined are sometimes valuable and sometimes misleading. The pure ideas of mathematics, applied to facts, have been the instrument of most modern dis-

covery. Indeed science in general deals only with qualities nicely limited and exact. This it may do with safety, for it looks at real things only in the light of a special purpose. Geometry considers the world as a system of lines and planes, with a view to measurement; chemistry as a group of substances, with a view to analysis, and so on down the list. Then too science is concerned only in conveying matters in which all can determinately agree. Such are merely the simplest qualities and relations of things, those aspects, in short, which can be at least approximately measured. This limitation makes necessary the use of a whole set of ideas so sharply defined that, like the circle and the line, they represent nothing in the existing world about us, but only the imaginary result of certain tendencies there.

With the subjects of sidewalk argumentation, however, the same happy results do not always follow. In such matters it is easily possible, by insisting on a sharply defined ideal, to produce surprising and novel statements about facts. This form of argument usually pretends to base its conclusions on the so-called true meaning of a word; and no reasoning is more common or more inconclusive. When Emerson says, for instance, that a man can suffer no harm which he wills to resist, he merely idealizes the definition of "harm." The real conditions, meanwhile, remain unchanged; the chance is as great as ever of being cheated in a trade or struck with falling timber. The same sort of juggling with meanings can produce statements of fact of any desired degree of pessimism. Who can say what might be implied in the highest ideal of literature, technical education, or brotherly love? In such lofty flights speculation can go no further than the guess that, whatever it might turn out to be, it would prove hard to reconcile with the aggregation of make-

shifts and compromises which we call human character. Indeed to find examples of this false use of ideal qualities it is not necessary to go so high. Most chess players, like most hunting dogs and most students, are but mediocre specimens; and this not so much on their own account as because of the loftiness of the standards which the mind conceives for their species. There are in the game of chess, as in the points of dogs and the opportunities of student life, such wide possibilities that only in the rarest cases does the individual do even partial justice to the ideas. These elements, so to say, do not occur free in nature. They are the result of an analysis, which extracts them, often in microscopic quantities, from the real situations it is attempting to study.

The dangers which arise from these methods of thinking are not so much faults of the individual mind as limitations of thought itself. Our mental processes, when clear, are mathematical. To think, we must, as in mathematics, first state actual conditions in the form of rigid symbols, then solve our problem with these symbols, and finally interpret the results again in terms of facts. Standing before an experience, we are conscious that here is something new. It cannot, however, be wholly new; it must contain qualities already observed in other things. These we seek for. We know they will belong to thought and be capable of clear definition. Having met them before, we shall know what to think of them, what to do with them. So much is natural and inevitable; but, if the idea when found makes us forget the actual experience; if we go on from that point merely juggling with mental symbols, it is the fault not of nature but of our own lack of common sense and logical training.



## EXERCISES

1. Consider the possible danger involved in using the following words as though they represented existing things:

The class of 1915, A— B— High School;  
Harvard College;  
The Republican party;  
American education.

Especially consider the following arguments in this light:

(a) Harvard College refused me my degree unjustly in 1840. I would not leave them a cent if I had a million.

(b) The Republican party brought us through the war, so the Republican ticket will always be good enough for me.

(c) Harvard College will always hold on to intercollegiate sports because they are profitable advertising.

(d) Harvard College knows no distinction between rich and poor.

2. Discuss the various possible meanings of "scholarship" and "an upper class" and consider whether the following arguments use the ideas always with the same definitions.

(a) Why not allow the university to deal with a man at the single point of intellectual discipline to the end of culture, or to some end of utility? I will not attempt . . . to enter broadly into the opposing theory of "direct concern" with the manners and morals of students. I will state at once certain considerations which seem to me to make this the working theory of the American college or university. . . .

Scholarship is not the first end of the college or even of the university. The common product of each is not the scholar by distinction, but the man who is fitted for the largest uses of society and the state. For every scholar who is to devote his

after-life to pure scholarship there are at least ten graduates who are to give themselves to more general callings. It is not safe to lay too great a burden upon a means through which a comparatively small portion will reach the ends of their college life. It is too much to ask of scholarship to do everything for men who are not by first intention scholars.<sup>1</sup>

(b) But it is of importance in every country to have an upper class. These should rise like towers and steeples in our towns and villages, like mountains overtopping the plains, imparting picturesqueness to the scenery, preserving it in the fancy, and enabling us to remember it. First, and in front, we should seek to have a high-toned moral and religious class spread through the community like salt to keep it from corruption. This, under God, is to be the safeguard to our homes and to the country generally. But we need an aristocracy for other and noble ends. We must have a highly educated class, trained at our upper schools and colleges, and diffusing everywhere an elevating influence. Retaining, as most will, the true spirit of science and of learning, they will be ready in their localities to make provision for every good cause, fitted to educate the young and exalt the tastes of the people by means of science, of literature, of art. These men will give the tone to society in their districts, and keep it from being corrupted by wealth when it would foster extravagance in living, intemperance, and low morality.<sup>2</sup>

3. In the following famous working definition test the sharpness with which the amateur is distinguished from his opposite the professional.

Amateur: One who has not entered in an open competition; or for either a stake, public or admission money, or entrance fee;

<sup>1</sup> Tucker, "Shall the University Concern Itself More Directly with the Morals and Manners of the Students?" Proceedings of the National Educational Association, 1903.

<sup>2</sup> McCosh, "The Phillips Exeter Lectures." Reprinted by permission of Houghton Mifflin Company.

or under a fictitious name; or has not competed with or against a professional for any prize or where admission fee is charged; or who has not instructed, pursued, or assisted in the pursuit of athletic exercises as a means of livelihood, or for gain or any emolument; or whose membership of any athletic club of any kind was not brought about, or does not continue because of any mutual understanding, expressed or implied, whereby his becoming or continuing a member of such club would be of any pecuniary benefit to him whatever, direct or indirect; and who shall in other and all respects conform to the rules and regulations of the organization.

4. Attempt a definition of the term, "A liberal education." How far may outward marks be used, as the completion of a certain curriculum of studies? If results are used, how far may tangible results be specified? Must these results be moral and physical as well as mental? In how far is the definition thus obtained convenient, i.e. adapted to some particular use of the term, and not so ideal as to shut out actual examples? Outline such a definition carefully in a paragraph of two or three hundred words. The following suggestions may be helpful in the study of the subject:

Liberal education in the sense of learning. What acquaintance with books? The chief works on every subject by name? The chief facts on every subject in memory? Ability to judge between good and bad books? More definite knowledge of any special subject? General information?

Moral character? Quickness in action? Decision? Application and habits of work? Honesty? Toleration? Kindheartedness? Modesty?

Love of the fine arts? Appreciation of good literature? Music? Critical appreciation?

Opinions about politics? Why? Interest in municipal and state affairs? Love of country?

Bodily health. Physical training? Habits of body. Fondness for sports? Outdoor life?

Personal traits. Ability to judge men? Tact? Powers of observation?

5. Review such cases as happen to come to mind of works commonly classed as "good literature" to see how far the tests offered in the following definitions are applicable and how sharply the given marks distinguish.

"Literature, then, is of a personal character; it consists of the enunciations and teachings of those who have a right to speak as representatives of their kind, and in whose words their brethren find an interpretation of their own sentiments, a record of their own experience, and a suggestion of their own judgments." — NEWMAN, *Lectures on University Subjects*, p. 20. Boston, 1897.

"To be convincing, literature must express emotion which is genuine; to commend itself to the best sense of mankind, and thus to take its place in the front rank, it must deal with emotion which is wholesome and normal." — ARLO BATES, *Talks on the Study of Literature*, p. 20. Boston, 1897.

6. Examine an attempt to fix a scientific definition, as the definition of wealth in Sedgwick, "Political Economy," Book I, Chapter III (London, 1883); or of money, Book II, Chapter IV.

7. In Exercise 6, Part I, Chapter I, compare the statements of President Harris regarding the moral tone of student life with your own knowledge of the facts in any particular institutions. The extract referred to may be regarded as an attempt to express in words a general idea.

8. Criticise the following attempt to define the essential elements in studies that give mental training. Each of

the marks mentioned, if defensible, must show some connection with the definition of thinking.

Thinking is a practical art. It is learned by doing. Yet there are subjects in the course which seem to me to be better fitted than others to teach you this art. I've been trying to find out what are some of the marks or characteristics of these subjects. They are, I think, subjects which require concentration of thought; subjects which have clearness in their elements, yet which are comprehensive, which are complex, which are consecutive in their arrangements of parts, each part being closely, rigorously related to every other, which represent continuity, of which the different elements or parts may be prolonged into far-reaching consequences. Concentration in the thinker, clearness, comprehensiveness, complexedness, consecutiveness, continuity — these are the six big C's which are marks of the subjects which tend to create the thinker.

Mathematics and pure physics eminently represent the larger part of these six elements which I have named.<sup>1</sup>

9. What statement about the nature of college life underlies the following piece of reasoning? Is the statement true as judged by your knowledge of the facts? Will it be best to regard the idea under which college life is here presented as an ideal or as a general idea?

There is certainly no excuse for the laxity in morals thus found in our colleges; for there is no place in the world so favorable for the development of a keen sense of duty as here; men in the contests of commercial life are apt to make pecuniary rewards the goal of effort, but the man in quest of scientific and literary facts seeks them independent of the warping effects of monetary returns; the statesman is apt to be reduced to the level of the politician as a result of inducements incident to secur-

<sup>1</sup> Thwing, "Letter from a Father to his Son Entering College." *The Independent*, 69:741. Reprinted by permission.

ing office; but the student in search of historic truth is impressed with the fact that largeness of life and high altruistic motive rather than greed for gain or office are the factors that have inscribed names on the roll of fame.<sup>1</sup>

<sup>1</sup> Fordyce, "College Ethics." *The Educational Review*, 37: 494.  
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## CHAPTER V

### IDEAS AND INDIVIDUALS

IDEAS, we have seen, are mental symbols, which in the realm of clear thinking represent concrete individuals. By their very nature these symbols are made incapable of reproducing accurately the things they stand for. They are not pictures, but signs; and they no more fully present their subjects than  $x$  in the algebraic problem is a photograph of the unknown. The things we wish to think about must first be rendered into terms of these mental  $a$ 's,  $b$ 's, and  $x$ 's. In this process they lay aside for the moment their individuality. Common sense, logically trained, must meanwhile keep track of all that is laid aside, and see that it is brought back into the thinking whenever it becomes essential to accurate results.

As a first step in this logical training, we must recall that no general idea completely presents an individual existence. With the individuals which most intimately concern us, days, hours, localities, domestic animals, and people, we take care to avoid the difficulty by giving what we call a proper name. This is intended to call to mind one alone, with all its personal traits about it. The general name may, however, represent sufficient detail for present purposes. The piece of chalk which one takes from a box on the desk is only superficially like the rest. The microscope, the fine balance, and on close inspection even the naked eye,—these all enable the accurate observer to give a long description of its personal traits.

So far as concerns distinction from the others of its class, it richly deserves a proper name, or at least a number; but it would be foolish to call a piece of chalk "Tom" or "Harry" when any other piece from the same box will serve as well for writing. This, however, is only half the story. It would be equally foolish to keep on using a mere class idea to represent a thing which requires distinction from the crowd. If a workman has in him the capacity of spreading groundless discontent among his fellows, or of developing into an efficient superintendent, it is wholly unwise to continue thinking of him as merely a cutter, or a stitcher, or a member of Gang Twelve. In other words, the whole question is one of expedience. If we let general terms stand in our minds for particular objects, we must be sure that they represent all the qualities of the objects which are for the moment necessary to our thought.

One method of representing all necessary qualities is to choose a general name which applies to only a limited class; for, as the class grows smaller, the thought becomes more comprehensive. There are in the world, for instance, many government employees, but only one President of the United States. At the same time, though the latter term includes fewer cases than the former, it means much more and requires a longer definition. The smaller the class in which your fact is included, then, the less danger of loss of identity. To deal with facts in classes is at best a rough and approximate method of thinking, and often leads the thinker into danger. The schoolmaster who forgets to study the individuality of his pupils, like the business man who attempts to handle his trade wholly by circular letters, is not likely to achieve the best results. These men will fail, however, not from adopting a wrong method, but from using a good method with clumsy haste.



If the complexity of their world prevents them from knowing individuals, let them at least get men into classes small enough for appropriate handling. One cannot work out details while thinking of individuals under the broadest general terms. If, for instance, a student is asked to write of school spirit as he sees it among his fellows, he summons up one or two hazy recollections of a celebration, writes, "The students of this institution display a high type of loyalty to the school," and falls back exhausted. A moment's thought, however, convinces him that his generalization is too sweeping to have much value. He accordingly looks more closely at his experience and beholds the men he knows falling into various minor classes, some pure exceptions to his rule, some willing to contribute money but not to work, some striving to advance the reputation of the school in athletics but not in scholarship, and so on down the list. Even within the smaller groups, each person has his own odd, individual mixture of characteristics. So the sentence in which the matter was first disposed of seems likely to grow into a book, and, worst of all, a book with no central thought. In discouragement the writer lets the original generalization stand, and in the morning offers the extenuating plea that, if he had treated the whole topic, he would have needed to sit up all night. Indeed the excuse has some justification. We must deal with facts in classes; time and knowledge fail us for any other plan; but at the same time we need not accept the first broad general idea that comes into our heads.

Again, the thinker must be sure that he knows something of the individuals represented by the general idea which he selects. The term he is using relates to subjects of thought, of one kind or another, such as are or may be matters of observation at different times and by different

people, as "piece of paper," "dwelling house," "teacher." One who pretends to employ these terms in the correct, or even the usual, sense must claim at least a representative knowledge of the instances his idea is supposed to cover. The lack of such knowledge, by people who believe they have it, is a fruitful source of bad reasoning. It leads to many absurdities that, to a well-informed mind, would be more amusing than a play. The accident of being beaten in one case at law is deemed sufficient ground for sweeping condemnation of the whole legal system, and especially of all lawyers. One who has in the last month picked up two or three second-rate novels is certain that fiction has greatly declined in these modern times. We talk in the high tone of generalization, as though the world of such things were before us, like an open book. What we really have in mind, meanwhile, is only the scattered instances that have fallen within our own small circle.

The lack of any wider knowledge is, of course, frequently excusable. Fairly comprehensive acquaintance with the members of a class is always difficult to attain, and sometimes impossible. In the case of pieces of paper, dwelling houses, or teachers, such knowledge might be roughly attainable; one who offered a statement about one of these classes could in time be confronted with the test of fact. So likewise with many common ideas, and with most of the terms in the natural sciences. Most notions, however, are of such a sort that one can get only an occasional or a partial glimpse of the things included under them. What statements, for instance, can safely be made of the term "American colleges"? Even after the elaborate researches of recent years, there are not many people who can answer in much detail. Thus, except for a few scientific terms, general ideas either remain indefinite or

are defined by each user to agree with the cases he personally happens to have met.

Finally, the thinker must not be surprised at differences of opinion. Since no general idea can exhaust a subject of thought, other people may not like the one he has picked out, and may even prefer its diametrical opposite. The simplest experience has countless relations with other things; it may, therefore, be brought under countless ideas. This truth is observable more especially in the words which register our impressions of things and events. A person unaccustomed to suffering is stricken with pain which he pronounces "unendurable." He sends for a physician, who declares the case "mild," or turns it over to a hospital, where they hold a consultation, and call it "interesting." In the same way the school boy struggles half the evening, with sensations best known to himself, to master a problem which the histories of mathematics describe as "one of the most beautiful demonstrations in the science." So the estimate depends upon the point of view. The character of most things we talk about is wonderfully complex; it falls naturally into whatever class the preoccupation of the moment is disposed to assign to it.

This truth is notorious even under the more accurate conditions of scientific work. Darwin relates that, visiting Cwm Idwal with a fellow scientist, he spent many hours in a careful examination of the valley in search of fossils. He walked over scored rocks and made his way round perched boulders; round him extended lateral and terminal moraines deposited by glaciers. Yet he did not notice a trace of these glacial phenomena, and it was not till many years later that he came to see the place in this new light. Then it seemed to him that "a house burnt down by fire" could not tell its story more plainly than this

valley.<sup>1</sup> So it is with most conditions, even the simplest; they are in themselves indifferent, "all things to all men." Each mind sees in them an instance of this or that class; but the idea under which they are grouped depends upon the observer's knowledge and interests, and is not necessarily the same for any two thinkers.

### EXERCISES

1. Examine your mind carefully and set down your impressions of at least one of the following classes: Maine guides; expert fishermen; sailors; newspaper men; professional musicians; socialists; city politicians; college athletes; grinds; teachers; teachers of English; self-made men; the newly rich.

Try to determine how much your views have been influenced by reading and how much by personal experience. Have you known any individuals of quality striking enough to color your views of the whole class?

2. How shall we criticise the three following compositions, considering them from a logical point of view?

(a) A grind is a sallow-faced, sour-visaged person, usually with spectacles, and of course a high forehead. He takes no interest in games or in the society of his fellows. When any fun is going on, he is to be found hidden away in a corner with a book. He is a cynic, and always sure that his opinion is right and everybody else is wrong. He studies late into the night merely in order that the next morning he may know more than anybody else. Nobody likes him except his teachers.

(b) Before we call a man a hard name, it is well to examine his motives. Some men appear to work hard just to get the better of their class-mates and show off at the morning recita-

<sup>1</sup> "Life and Letters," I, pp. 48, 49. Cited also by Cramer, "The Method of Darwin," p. 128. Chicago, 1896.

tion. Of course it is a crime to want to show off, and it is something that college men who specialize in athletics or social life never, never care to do! Such grinds deserve to be held up to ridicule. Other men grind because they need a scholarship, and if fortune had favored them with a little more money, they would be just as good fellows as anybody else. Then there are some who have in mind to make a name in the world, and knowing they are not brilliant have determined to work for it. I cannot see that such men deserve to be called "greasy grinds." Alas! I wish I were one of them.

(c) My knowledge of grinds is very small, for I never knew but one, and he was probably not a genuine case. He used to go home at once as soon as school was out, and work all the evening and part of the night. But he was not a pale, sickly person as I imagine a grind would be. He had red, fat cheeks, and a laugh that would have done credit to a mule. Neither did he stand at the head of his class, but then, as I have said, he doubtless was not a true grind.

I should think a true grind might be a most uncomfortable person to have about.

3. Study the two following expositions in connection with your own experience of the New England farmer. Considering the class as a whole, how many of the statements in the first essay seem safe? Could any other general statements be added? Has the second writer adopted the most useful subdivision of the class?

#### THE NEW ENGLAND FARMER

The men who make their living by tilling the soil probably work the hardest and obtain the least apparent result of any class of people in New England.

Their work continues the whole year, and the regular duties in every season are laborious. There are planting, sowing, and preparing the soil for the crops to do in the spring; in the summer those crops must be cared for, and the work of gathering

them continues into the fall. Then in winter they have wood and ice to cut and haul, and repairs to make on the buildings. These tasks do not sound hard, rapidly enumerated, but every one necessitates heavy, tiresome work, and makes those who do it old before their time.

The farmer's day is very much longer than that of the modern day laborer. His rises, on an average, about five o'clock. His first duty is to attend to the live-stock. The regular work of the day is carried on till about five in the evening, when the cattle and horses are again tended, and the chores about the buildings are done. Nine o'clock is bedtime in most farmhouses.

We notice how these people toil, and then we remark, "So-and-So is a thrifty, hard-working man; he must have a considerable amount of money saved up." On closer investigation we find that about ninety per cent of them have difficulty in making both ends meet, not because they are not thrifty or hard-working, but because the results of their labors bring them so little money, and the expenses necessary to keep the place in proper condition are so great. They profit by sale of hay, grain, potatoes, and perhaps occasionally butter and eggs. All of these bring fair prices, for the farmers of to-day cannot be beaten down in selling prices. The money from these sales is the main part of their income. Now, seed and fertilizer must be purchased. Farm machinery, which saves labor, to be sure, but is expensive, is needed. Every year some important repairs must be made on the buildings, and lumber is high, not to speak of labor. "Of course," we say, "it doesn't cost the farmer much to live." This is because so many of the things they use are from the farm. This is, indeed, a fortunate thing, because, if they did have to pay as much money out for necessities of life as city people, they really could not exist. Many of them are "land poor." They own so much property that they cannot clear and cultivate all of it, and some rests idle in their possession, because no one else desires it.

That the men who live on the farms are a healthy class of people is a general opinion. To be sure, they have the great out-doors at their disposal, and plenty of opportunities for

exercise. To counteract these advantages are the disadvantages of improper food and lack of proper care for themselves when working. They become rheumatic, and troubles set in caused by the presence at every meal of sweetmeats.

Still, these people seem satisfied with their lot. They are jolly, and have a cheerful word for everyone and a welcome to the stranger to share what little they may have. They seldom visit large cities, and, in fact, have no desire to do so, and it must be some event of considerable importance which will cause them to take even a day off. They become extremely narrow in their views with respect to life in general. They read the newspapers very thoroughly, they study affairs related there, but this does not seem enough to broaden their minds. These men are quiet, keep more or less to themselves, and do not pry into the business of others, but in small communities it is almost impossible not to know what neighbors are doing.

#### THE NEW ENGLAND FARMER

The old Yankee type of farmer is, I suppose, familiar to all of us. This type, however, is slowly disappearing, and it would therefore be fallacious to put all New England farmers in this category.

Roughly speaking, there are at the present day two main divisions of the farmer folk; namely, the descendants of the original New England stock, and the modern agriculturist. I intend to show, as far as practicable, the past and present conditions of each division.

The Yankee farmer, generally speaking, is a simple, unobtrusive man; a true son of nature, and a veritable Rip Van Winkle. In the days of his forefathers, ambition was rather severely restricted. Few had any desire to do more than satisfy the wants of the family. Their wants were simple and few: clothing was made at home; food was plentiful; the pleasures of the country were easily obtained, and for money there was little or no use. They had their cows, sheep, pigs, oxen, perhaps a horse or two, and poultry. The children found pleasure in raising dogs,

cats, rabbits, and even woodchucks, crows, and foxes. The house was full of their childish trinkets, and everything combined to give the place a cosy, homelike appearance. Barley, buckwheat, rye, corn, potatoes, hay, beans, pumpkins, fruits, and garden truck were the common and staple products. But, as their occupations were thus many and varied, attention was divided, and they did not achieve any particular success. Since they did not have to depend entirely upon the land for their living, the farming was carried on in a rather desultory and haphazard manner. Lumber was cheap, and the buildings were invariably in rather good condition. Not much farm machinery was used, and most of that was home-made. The land, being rocky and hilly, was cultivated only in so far as was necessary. Even with a few years' neglect, it had a great tendency to turn back into woods.

The table was supplied with plenty of good, wholesome food, for wild game and fowl abounded, and most of the farm products were consumed. As a result of this, and of the daily outdoor occupations, the people were healthy and vigorous; sickness was rare.

Such living, and constant companionship with nature, make the perceptions keen. Yet the farmer's mind was narrow. Lack of education had something to do with this. The affairs of the day were not so pressing as to claim his attention, and the only available matters of discussion were matters arising in a community of farmers. In a way, he was isolated from things of current interest. This isolation did not tend to broaden his opinions, which, in the first place, were not original, but handed down. But such ideas as he did have were unshakable, and strictly adhered to. Furthermore, this isolation, and exclusion from all but those of his kind, threw him into a permanent rut of thought, and, besides, made him shy of strangers, and suspicious of their advances. Perhaps this feeling of reserve and cautiousness was shown more in his treatment of city people than anywhere else. The farmer's diffident manner arose mainly from his very simpleness, since he could not understand the hurry, bustle, feverish activity, and continued striving of the city.



Yet these people were happy, contented, and thankful to God for their lot. It was from such people that the great men of the times arose.

Such was the life and such were the conditions surrounding the old Yankee farmer; but his descendants on the farm live a very different life, in a changed atmosphere.

The most serious problem that a farmer has to solve is the labor problem. In the old times, large families were the rule, and the children remained at home and assisted in the labor. Moreover, in the busy season, the neighbors would get together, and, in turn, help one another do the work. When hired help was really needed, it was readily obtained at a low price. Our farmer of to-day, however, cannot rely upon such methods. Statistics show that the number of children in a family is diminishing to an alarming extent. Farmers' boys will not stay in the country, and the girls cannot, or will not, help out as they used to do. The neighbors cannot assist, for too often they also are in the same position. Hired help is the farmer's last resort. Now, farming demands a certain amount of skill and strength, both of which are absolutely essential. The trained, competent, and responsible man who will work for a reasonable sum cannot be found, for the work is unsteady, hard, and monotonous, and there is not much money in it. The farmer cannot pay city wages for farm labor, for he does not get city prices for farm products. The foreigner is available, but he must be taught the language and the American method of agriculture. Moreover, the country people seem to be afraid of him, and, for various reasons which need not be entered into here, don't want him in the house. Machinery might be of service, but the true Yankee does not believe in it and has not the money wherewith to purchase it.

After all, it is perhaps the money question which is at the bottom of farm affairs. The farmer must now buy at high prices articles which formerly came from his farm, as, for instance, clothing and flour. Taxes are rising, and the cost of keeping up his property and land is almost discouraging. So he economizes at home and tries to get more out of the farm,

which process acts disastrously both on him and on the land. His fathers dabbled in many branches of farming, with but nominal success all round. Forced to work alone, he cannot find time for so many different occupations, and so must confine himself to a few. From this necessity have come the various branches of dairying, gardening, cattle-breeding, poultry raising, and general crop growing.

Here again he is at a disadvantage, for he really does not know enough about any one specific division to make it pay, being hampered by the same old characteristic ways of his predecessors. So he is forced to economize still more in the home. In this way I account for the poor table of the present Yankee farmer; in the same way I account for the poor condition of his home, buildings, cattle, and land. The latter, after a few years of neglect, improper care, and strain, deteriorates; and the farmer is so much the deeper in difficulties. Naturally, the inevitable results of such conditions, the continual anxiety of trying to make both ends meet, the thought of impending and ultimate failure, have a deleterious effect upon his mind, opinions, and general state of health. He broods continually over his troubles and does not like to mingle with others. Beyond mere passing notice and comment, he takes no interest in outside affairs. His home contains only the necessities of life, with nothing to amuse, cheer, divert, or instruct; and he finds but poor solace in his pipe and cider. This uncongenial atmosphere, poor fare, hard work with no results, and the never-ending worry have their effect finally: his body is broken and his spirits fail him. He loses faith in man, and very often in God, for he comes under no edifying influence, since it is his opinion that going to church is not worth the trouble of dressing, missing his dinner, and neglecting his chores. Plainly, it is hard to get along with such a person, who is not well disposed towards anyone. This ill-feeling is particularly noticeable against city folks, for the farmer believes that they have a good time and the best of life at his expense. He is ridiculed and avoided: the popular description of the queer, cranky old Yankee is a sad reality. Finally he is forced to give up the struggle in despair,

and goes to the successful son or daughter in the city. The farm is now abandoned.

There is where the foreigner steps in. He comes from a country where everyone in the family works, and works hard; where food is extremely high in proportion to wages received and he must live cheaply to live at all; where land is high and the poor own but small portions; and where a general knowledge of farming and economy is more widespread than in America. This man comes over with a large family, a little money, and a lot of good intentions. Land in New England is still comparatively cheap, and for a small amount he gets enough to cultivate. Perhaps two or three other families of foreign people come to the neighborhood. What is the result? The conditions now are perhaps comparable to those formerly existing on the farm. There are large families of persons, strong, willing, and able to work. Everyone, even the youngest, has a task to perform. Neighbors co-operate, seemingly working together in perfect harmony. That is how they get along with the labor problem.

Their food is simple, cheap, plain to the extreme, but plentiful, and they thrive and work hard with rations on which a Yankee could not exist; the greater part of it comes from the farm, and thus is stopped another source of expense by which a New Englander would be handicapped.

Another important point is that the foreigner has a better general knowledge of agriculture, and of the care of animals, than the American. Of course this helps in many ways. He finds the land in poor condition, but he knows how to build it up, and then how to bring it beyond the stage of productiveness to which the Yankee was limited. His animals are better cared for than he himself and he gets more out of them than the old farmer did out of his. Here again is a saving of labor by increased animal efficiency and more produce because of improved land; this means more profit all round.

Most of this money goes back into the land, for the immigrant gives his care first to the animals, then to the land, and last to his home and himself. It is easily seen that, living and farming on such a basis, the foreigner is bound to succeed.

He is becoming more and more an important factor in the reclamation of New England farms.

In the last division we have the modern agriculturist. This division may be again divided into three classes: the man who takes up farming as a business, the specialist, and the capitalist. In any case, there is one essential point of agreement, which is that farming is regarded as a science.

The foreigner makes mistakes, but he succeeds through his hard work and frugality, almost by main force. The modern farmer succeeds because he knows what to do, when to do it, and how to do it. He understands finance and watches the market for a favorable opportunity to dispose of his produce. He recognizes the value of machinery as a solution of the labor problem; he utilizes a maximum amount of machinery and animal labor. He profits by the government attempts to help farmers. In short, he studies the subject and, better still, applies what he learns.

This class is invariably of higher standing in the world and can understand refinement and culture. Their homes show this appreciation of higher things and exert a pleasant and instructive influence. They are business men on a farm and are as interested and take as active a part in everything which concerns the public as does the city business man. Although the extent of this recent system is not very great as yet in New England, the Government Experimental Stations and Agricultural Schools are bringing it more and more to the front. If their statistics and bulletins may be believed, the success of scientific farming is assured.

## CHAPTER VI

### LOGICAL SUBDIVISIONS

IN any exhaustive research into the nature of a subject, it is desirable to avoid the one-sidedness of the method of dealing with individuals in classes, but at the same time to keep its simple and clear distinctions. This is done by viewing the subject under a series of related classes, and thus developing all that need be said about it from some particular point of view. So the old-fashioned teacher of rhetoric called his pupil's attention to body, introduction, and conclusion of the essay. With those three general headings he undertook to sum up all that need be said of a piece of writing as regards the point of view of its structure. It was a purely mechanical division, as surely complete as dividing a six-inch rule into the first three inches and the last three; and yet it had the advantage of presenting three topics for discussion instead of one. This may be called the analysis of an idea. Again, in order to develop his criticism in greater detail, the rhetoric teacher classified all writing as narrative, exposition, argument, and description. This is, of course, the division of a class. These two illustrations represent the two methods of logical subdivision. We may analyze an idea into its abstract parts, or we may separate a class into smaller classes. The purpose in either case is the same: to spread out a topic before the mind and to secure a logical and orderly development.

In such an attempt, the first essential is to find a prin-

ciple by which the division may proceed. The easiest principle to handle, and the most surely comprehensive, is time. If, for instance, one tells completely the story of the development of wireless telegraphy, one may be sure that the parts of the subject are treated distinctly, and that nothing essential is left out. Another principle almost as convenient, and more generally useful, is space. To deal with the whole subject of body armor, it is necessary only to take the parts of the body one by one and describe the devices for protecting each. The students of a school may, by a similar use of space relations, be classified as those who live in dormitories, those who lodge in the town, and those who come daily from other places. This division covers the whole of space, and so is evidently comprehensive.

When neither time nor space will serve for a division, some other principle must be applied. The most advantageous choice will often be found connected with the point of view from which the topic is being considered, or, in other words, the purpose behind the treatment. In the attempt, for instance, to increase the interest in a club or society, the members would be properly divided according to the causes which keep them away from the meetings. This happens to be a case in which the principle can easily be expressed in words. In other instances, though the division is felt to be satisfactory, one may be completely baffled in the attempt to state the idea on which it is based. International law recognizes the rights of a country to be three-fold: of sovereignty, independence, and equality. This division evidently covers the whole ground; and yet on what is it based? Perhaps as good a suggestion as any may be that it rests on a space relation. Sovereignty concerns internal activities, independence is freedom from outside interference, and equality means a

square deal in all reciprocal relations between the interior and the outside world.

Whatever the principle, it should, in theory, fulfil two requirements: first, its classes must not omit anything important; and second, they must not be of such a sort that the same individuals can fall within two or more. For example, an instructor, studying the motives to which he can appeal to get good work, may divide his students into four classes: those who work to please the teacher; those who enjoy their work; those who wish to learn; and those who work because they are accustomed to obey orders. In attempting to criticise this division, he first asks himself whether there may not be some men not included in any of the groups. This question he cannot answer with certainty. The principle behind the division is cause; and there may be at work a thousand causes of which he has no idea. On this first point, then, he can say only that at present no other important cause occurs to him. The second step in his criticism will be to ascertain whether there are students who belong in two classes. If those who wish to learn are also those who enjoy their work, then he will do better to drop one class of the two, or to try some other scheme of division. So he attempts, as far as conditions permit, to secure the two theoretical requirements of comprehensiveness in the whole scheme and mutual exclusiveness in the subdivisions.

The principle, once selected, may lead to the division of an idea, or to the separation of a class into smaller groups. The simplest method of dividing an idea is to take the qualities which would go to make up a definition or description and develop them separately as subtopics. A student, let us say, wishes to speak before his class on the German theatres. He wants his talk to move ahead by obvious steps, and he wants an outline which will hold

his own mind down to details. Therefore he concludes to deal first with the theatre system, second with the actors, and third with the plays. This is obvious logic; one needs no knowledge of Germany to invent the scheme, for it rests merely on the statement of theory that every theatre must have a management and actors and plays. In a similar way, the effects of the atmosphere may be classified as those due to its own nature, as oxidation and carbonation; those due to its state, as freezing and thawing; and those due to associated things, as deposits of dust and loess, light in shadowed places, and colors in the evening sky. The logic, again, is obvious. Even an inhabitant of the moon, wholly unaccustomed to atmosphere, must know that, whatever it is, it has a nature, a state, and relations with other things. This is plainly a division based on the nature of the idea.

Most divisions of an idea, however, are not of this obvious sort, but call, rather, for knowledge of the special case. Of such a kind, very frequently, is the outline of a book or long special article. In dealing with sugar, for instance, one might treat of its chemistry, its culture, its manufacture, its history, and its statistics. A complete explanation of electric submarine mines would involve an account of the source of the power, the position of the source, the position of the mines, the communication, the method of springing the mines, safety appliances, and the advantages of this type of mine. In both these cases only a few, if any, of the headings can be derived from the idea itself. The others, though important, are accidental qualities. Experience alone can discover what they are.

The second type of division relates to the individual cases, rather than to the idea. In this kind the off-hand method of pure theory is not frequently to be applied. A good working division of a class presupposes, in most



subjects, an intimate knowledge of the facts. A layman might divide fungi into edible and non-edible. That would be at least a natural step in thought, though by no means logical or necessary. Further than that he could not go without study of the instances. The next principle of division might turn out to be form, or color, or any one of several other qualities. In the same way a person without technical knowledge might assume that earthquakes could be classified according to the nature of the disturbance from which they arose. There, however, he must stop. As to the fact and as to the list of causes, if any, he would need the advice of a specialist.

There is one sort of subdivision of a class which happens to be comprehensive, obvious, and fatally easy to handle. It is the separation of those which are of a particular kind from those which are not. In attempting to use this method the thinker will need, more than anywhere else, to remind himself of what he knows of the relation between ideas and subjects of thought. If the student of this book has not suffered from the distinction, already referred to, between those who are good and those who are not, he must at least have met that between those who have reached years of discretion and those who have not. This classification is at the bottom of the theory of discipline in almost every home. Another two-part division no less troublesome is that between those who know a subject and those who do not. We meet it daily in the class-room, and have it forced upon us by teachers who are perhaps not any longer students. The trouble with all such disjunctions is that they are not comprehensive. They leave out of count a third, intermediate class, which usually contains the precise case that is in dispute.

In the subdivision of a class it is highly important that all the qualities of individuals in the smaller groups be

naturally associated with one another, and with the purpose of the division. If that be the case, any convenient external sign may be adopted as a badge of distinction. It would be of no consequence, for instance, that a certain group of animals have hoofs, except that this peculiarity is accompanied with others which distinguish this kind clearly from all the remaining classes. Such a combination of an associated group of qualities makes a useful subdivision. Again, it might occur to us to classify weapons according to their material. In that case, however, we should have the stiletto and the automatic pistol incongruously placed together; and the class would be useless as a means of developing thought. Once more, suppose a school in which regular courses of studies were laid down in requirement for the degree. It might then be natural for the cataloguer, thinking only of separating those in line for graduation from the others, to divide the list into regular and special students. This would be purely a business matter, with no purposed implication of praise or blame. Special students, however, would include both those who had failed in the regular courses and those who had never desired to undertake them. If this fact were called to the cataloguer's attention, he would see that one of his classes included qualities not related to his main purpose, and would reform it. He would perhaps group the students thereafter as regular, irregular, and special. Thus a classification must be not only comprehensive and distinct, but adapted throughout, in every minor group of qualities, to the purpose under which it was drawn up.

Finally, in dealing with these subdivisions, one must observe the general caution that applies to the use of all ideas. Mental distinctions are not always the same as differences of fact. In every classification there will be

found individual cases that fall on the line and are cut clean in two by the demarcation. Part of their qualities belong with one group and part with another. The artificial lines which we draw do not exist in nature. They are drawn through thought, and that merely for the purpose of rendering the measurement of nature more exact.

### EXERCISES

1. What is the classification implied in the following statements? Explain the principle when possible and define the words employed in naming the subdivisions.

(a) Adverbs express either the place of an action, its time, its cause, or its manner.

(b) In proportion as modern science gets more and more mastery of details, scientists tend to become interested in facts, to the exclusion of a wider view of the theories involved.

(c) The earlier preachers of this theology set the ideal of the Christian life so high that persons obliged to get along in contact with the real world thought a long time before allying themselves with the church.

(d) Scientific management takes the form of the application of mathematics and exact methods to every-day work. Substantially it is nothing more than the use of common sense in business.

(e) Thoughts, emotions, desires, — in short, all the physical and mental states, — are mere qualities of the human spirit. What the thing itself may be, substantially, we have no way of knowing.

(f) It seems hard treatment to tax a man on the basis of a necessary quality, like the mere fact of being alive. Accidents, — such, for instance, as the possession of four-percent bonds, — he may perhaps owe to the protection of government and be bound to pay for.

2. International law covers the relations between states. Examine the two following subdivisions of such

relations. Is there any principle behind either so that we may judge of its completeness?

(a) Commerce, travel, government, war.

(b) Rights against other states; rights of territory; of intercourse; of foreigners within a state; of ambassadors; of treaties; of war.

3. Divide the subject of transportation according (a) to the nature of the route and (b) to the nature of the vehicle. Which method, or what mixture of the two, is best for a development of the subject?

4. Study the two following divisions of the primary wants of the race. Consider them first as theoretical divisions and then in the light of their usefulness in developing an account of the useful arts, the trades, manufactures, and so on, which minister to these wants.

(a) Necessities, conveniences, comforts, and luxuries.

(b) Sustenance, clothing, shelter, transportation, defence and offence, enjoyment.

5. The following is the list of activities usually assigned to municipal governments. Is there any way of telling whether the list is complete? Is it based, for instance, on the primary wants of the race, or on the definition of city life? Judging by the conclusion which you reach, does the question of adding a new activity, as for instance ownership of an electric lighting plant, depend in any degree on logic?

Ways and means of communication and transportation.

Water and lighting supplies.

Municipal markets.

Disposal of wastes:

Sewage, garbage, and rubbish.

Street cleaning.

Protection of life, health, and property:

Police.

Courts.

Board of health.

Fire department.

Building inspection.

Education.

Recreation:

Playgrounds.

Parks.

Charities and correction.

6. Suppose that the student has read the story of Naaman, as referred to in Part I, Chapter II, and wishes to develop and at the same time to arrange his ideas as to the character of Naaman. He makes three separate outlines, trying each time a new principle of classification, as follows:

#### THE CHARACTER OF NAAMAN

- |           |   |
|-----------|---|
| I.        | (1) Attitude of mind before hearing of the prophet. |
| (Time)    | (2) Reasons for taking journey.                     |
|           | (3) Behavior in the presence of Elisha.             |
|           | (4) Reasons for bathing in the Jordan.              |
|           | (5) State of mind after the healing.                |
| II.       | (1) Arrogance.                                      |
|           | (2) Willingness to be advised.                      |
| (Quality) | (3) Frankness.                                      |
|           | (4) Generosity.                                     |
|           | (5) Capacity for faith.                             |
|           | (6) Religious feeling.                              |
| III.      | (1) Previous training.                              |
|           | (2) Religious notions.                              |
| (Cause)   | (3) Surroundings.                                   |
|           | (4) Position.                                       |

- (5) Occupation.
- (6) Effect of Elisha's reception.
- (7) Effect of the servants' advice.
- (8) Effect of the cure.

Study the above outlines to determine: (1) which will give the writer most assurance of having covered the subject thoroughly; (2) which will most expose him to the danger of repetition; and (3) which will be most likely, when filled out, to give a natural and convincing character sketch of Naaman.

7. The points of view suggested in Exercise 4, Part II, Chapter II, should be carefully studied as examples of classification. In each set of headings (as A and B; A, I and II; A, I, 1, 2, 3, etc.) study the completeness of the classification and the idea on which it is founded. Try especially to suggest a more complete set of headings for the social life of the community (B, II).

8. Study the following division of the results of a liberal education. It should be comprehensive and the standards chosen are intended to be useful in developing statements that will be important and characteristic of the liberally educated man. Can you suggest changes or additions?

Intellectual results:	Reason
Mastery of facts:	Creative power
Science	Application
Literature	Appreciation
History	Moral results:
Language	Self-restraint
Development of mind:	Unselfishness
Memory	Religious feeling
Imagination	Manners:
Judgment	Tact

**Manners:**

Breeding

Bearing

Speech

**Physical results:**

Exercise

Cleanliness

Temperance

9. The following is an incomplete set of headings designed to apply to the students attending any high school. Try to fill it out by adding all the headings necessary to produce a complete report on the student body. How many of the topics on your list would be of interest to the high-school principal? to the athletic manager? to the salesman who visited town with samples of sporting goods?

Number

Occupation of father

Religion

Age

Nationality of parents

Scholarship standing

Sex

Income of parents

Fraternities

Residence

Allowances

Support of athletics

10. Devise a set of headings for a card catalogue, three inches by five inches, on which the scholarship committee of a college may record information regarding its scholarship applicants.

11. A young engineer has determined to make himself a specialist, with a view of writing and talking on aeronautics. He is beginning to use a filing cabinet. Suggest as many convenient titles as occur to you for the envelopes.

## PART III

### THE VERIFICATION AND PROOF OF STATEMENTS

IN Part III we are to consider the final question of logic, that of the relation between our facts and those of other people. In the conflict of opposing points of view, we are forced, sooner or later, to decide who is right. Philosophically and logically, this question cannot be answered till its form is changed; but practically it can. One may be right in any one of several senses. There is, first, a variety of truth which may be called external. It is in agreement with the experience of the majority of well-informed observers. This kind may rest on direct testimony as to the fact, or on a law of how such facts generally work out. In the latter case the statement is verified only indirectly, through a process of reason, and is not known to be certainly, but only probably true. The second variety of truth is mental. Its statements rest immediately upon ideas, and do not need the evidence of the senses for their support. Finally, both external truth and mental truth demand a social backing. The observation, the law, or the definition must be supported by the majority of intelligent people concerned. There is no other basis on which they can lay claim to be called the truth.

Chapter I, continuing in the line of Part II, Chapter III, distinguishes statements of physical conditions from statements about ideas. In Chapter II are explained the



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more direct methods of arriving at the truth, observation, already treated, and reports of the observations of other people. In this connection the student's attention is called to the great storehouse of authoritative statement to be found in reference books, and he is asked to examine a few of the compilations most useful in general reading. Chapters III and IV discuss the methods of arriving indirectly at truth which cannot be directly observed. That is, one may judge of its probability on the basis of what is usually true of similar things, or in the light of established sequences of cause and effect. In Chapter V is shown the method of developing theoretical truth, through deduction from larger and more widely inclusive statements of theory.

The exercises in Part III are almost wholly critical and analytical. Students who have sufficient time to devote to the subject should in addition write arguments and engage in oral debates. In this way they will speedily provide themselves with a multitude of interesting and amusing examples for analysis. The debates should be informal and will require no text-book in argumentation for their guidance. The essentials are merely a suitable subject, as timely and personal as may be, and material for such reading as time permits. The choice of subject must be left to the teacher and his class. In the selection of material, if the subject be one of general public interest, the Appendix on reference books should prove helpful.

## CHAPTER I

### STATEMENTS OF FACT AND STATEMENTS OF THEORY

STATEMENTS obtained by the use of general ideas, pure ideas, and ideals are of two sorts, each necessary to the process of thought, but each independent of the other and setting up its own standards of accuracy. One of these classes relates to actual conditions, the other to theories. The distinction between the two is in general not difficult of illustration. If, for instance, I allege that during the last municipal election no Democrat voted the independent ticket, I refer to a state of things in the outside world of experience. In attempting to back up such a statement, I need not rely upon the opinions of an authority, however weighty, and I do not appeal to reason; rather I go out and compile statistics or take testimony. The matter concerns a large group of individual cases, a general idea, and can be finally settled only through an appeal to evidence. Such assertions may be called, for lack of a better name, statements about facts.

If, on the other hand, I assert that no true Democrat will ever vote the independent ticket, my meaning is, obviously, that no man who bolts from his party is worthy of the name of Democrat. A position of this sort no appeal to facts can finally establish, but only an agreement as to the proper meaning of a term. The thought behind the word "Democrat" is in this case an ideal, but the same sort of reasoning might equally well be based on a pure idea. The point is that, in either case, to prove the assertion recourse would be had to precisely those

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means which were found valueless in establishing the truth of a statement about fact. One would need either to overwhelm an opponent by quoting authorities, or to reason him out of his position by reference to some definition with which he must agree. Assertions which need to be supported in this fashion may be called statements about theory.

The distinction between facts and theories is, like any other distinction made in thought, merely a convenient method of analysis, intended, for greater ease of understanding, to separate two qualities not always kept separate in reality. In using this distinction we are to remember that any particular statement may on examination prove so ambiguous that no one can exactly determine whether the speaker meant it in a theoretical or in an actual sense. The speaker himself will often be puzzled to know. If we put to him the question, "Are you talking now on the basis of your experience with facts, or do you mean that the thing seems to you in theory likely to be so?" he will probably reply, "It seems to me that it must be so, but at the same time I have had a certain amount of experience which confirms my view."

Statements of fact, pure and simple, with no admixture of theory, are comparatively infrequent. They would need to be made by what is called a pure observer, one who, like a sensitive plate or a seismograph, makes it his business merely to register what goes on before him. This is the ideal attitude in the beginning of any scientific problem. There the observer attempts to devoid his mind of feeling and of prejudice, so that he may attend strictly to facts. The errors in observation arise in large part from the difficulty of attaining this mechanical perfection. The natural man, having been nicely put to sleep, is constantly waking, and sadly interrupts the

working of the machine. He is constantly throwing out disquieting suggestions of what he thinks ought to be, or what he prefers; and the moment the mind attacks these questions it is no longer in a condition to deal with pure statements about facts. Facts belong solely in the world of what is.

Since the world of facts has appropriated the question of what is, there remain for theory only two other matters: namely, what must be and what ought to be. What must be can never be determined through observation, for nature knows no necessities, or at least, if she knows them, she has not communicated them to us. The laws of the laboratory are not like those of the legislature; they make no pretence of dictating to facts. If, for instance, one says, "Silver is always tarnished in the presence of sulphur, and when I put my watch in my match-pocket I ought to have known that it would be blackened," one uses an expression sufficiently accurate for common speech, but still not exact. More nicely put, the thought would run, "Silver has always been observed to tarnish, and so the watch will in all probability be blackened." As to the necessity of the case, no man could fairly make an assertion unless he had the thing under his own control. He can say, "This must be," where his own will is sufficient to produce it; but in regard to changing the chemical properties, — or even guaranteeing them against change, — the will has not the slightest effect. There is one way, and only one, of getting round the obstacle and arriving at a statement of what must necessarily be true; that is to shift the definition till it suits the case. Suppose, for instance, that by a miracle the silver were for once preserved from tarnishing. Then the owner, who had asserted that it must become discolored, could still save the day by denying that the material was really silver. Even

when confronted with chemical tests, he might still hold out, with the assertion that nothing could be really silver, in his sense, unless it were found to tarnish. Thus he could remove the whole dispute from the world of facts and take up an impregnable position in the world of definitions and theories.

Such a procedure, though a bit fantastic in this case, is characteristic enough of human nature, and may be matched with a thousand instances from daily life. A commercial agent sells you a machine which is warranted with proper care to last ten years. If it breaks down on the first day, he has merely to throw you back on the definition, — you did not give it proper care. Or again, another tells you that he has a doctrine, or a medicine, which, if taken in faith, will cure all your ills. You try it without results, but the experiment is inconclusive, for no doubt you lacked the faith. Even if the whole world tried it and failed, it could still be pointed out that there is no true faith this side of Heaven. With such reservations it is quite possible to make assertions about what must be, for they relate, fundamentally, to ideas, which can always be adjusted to suit the speaker. They have on the face of them a guarantee that they belong among theories, for they are in every way independent of the world of facts.

The second department of theories, the question of what ought to be, relates to the use and definition of ideals. This is a type of thinking in which the mind frees itself from obligation to the facts given it by experience and produces standards of its own. Theories of this sort cover what, broadly speaking, we call the difference between "good" and "bad." If, for instance, we permit Farmer Brown to serve us again by way of illustration, we may suppose that, driving home from church in a reasonably

social mood, he desires to make conversation with his wife. He comments on the sermon; it was in his opinion remarkably good. If Mrs. Brown happens to be unresponsive, her opening for dissent is clear. She expresses a wish that the preacher would drop his theology and talk a little practical religion. After recovering from this rebuff, the farmer may try again. He saw Ruben Wildfire at church with his wife and imagines him to be doing better lately. Mrs. Brown doesn't know what he means by "doing better." Every time she goes to the store she sees Ruben sitting idle on a soap box. If in an unusually placid frame of mind, Farmer Brown may try a third opening. It was a pretty hat Nelly Grey had on. Again Mrs. Brown is unable to agree. She doesn't know what he means by "pretty"; it was last summer's hat made over.

At the close of such a conversation Farmer Brown is likely to feel that he has been abused. The logical mind, however, can see plainly that his overthrow was due chiefly to an unfortunate choice of subjects. Without in the least intending it, he has invaded the domain of theory, in the department of what ought to be. He has opened up three questions which rest wholly on definitions, — one's ideas, namely, of a good sermon, a decent behavior, and a pretty hat. Indeed the trouble lies deeper still. Before one could come to a rational conclusion on these specific opinions, it would be necessary to answer the fundamental questions on which they rest. These are: What is true religion? What is the ideal of manly conduct? and What is beauty? — three problems not likely to be solved within the limits of a drive from church. Yet, such as these problems are, they illustrate sufficiently well the type of theories that concern what ought to be. Their theoretical character is seen this time, not in the attempt to tell facts what they must do, but in the disposi-

tion to show them what they ought to be on pain of falling below the ideal.

The whole distinction between facts and theories can perhaps best be presented, by way of a final word, in the following variety of what is later called the "proof of envy." It has been familiar to most of us, in moments of discouragement, throughout our school days.

"The life of the student is a hard one, for he is forever under somebody's thumb, forever at tasks which are set by another, and in which often he fails entirely to see anything of interest or of value."

This, as the presence of the word "for" reveals, is a piece of reasoning; and it is based, therefore, on some sort of general statement connecting freedom and happiness, — the lack of freedom brings unhappiness. If we question the speaker as to his grounds for believing this fundamental statement, he may say, "People who lack freedom are seen to be unhappy. History shows this, my own life shows it, and the belief is supported by what I have observed of the lives of other men."

In such a case the statement relates wholly to facts. It makes no attempt to explain the thing logically, or to show why it must be true, but is content with asserting that it is. On the other hand the speaker when questioned might give a wholly different reply.

"Anyone can see that a man who lacks freedom cannot be happy. Freedom means the ability to do as one pleases, and to do as one pleases is part of the definition of happiness."

Here is a matter of pure theory. It is, in the first place, based on the relation between two ideas; the connection behind it is a rational connection of thought. Moreover, it undertakes to dictate to facts as to what they must do. This it effects not, of course, through a power over the facts, but through the ability to refuse them admission

under the terms employed. If the man who asserts that he who lacks freedom must be unhappy is confronted with any troublesome instances to the contrary, he can always rule them out. "The lack of freedom," he can say, "is only apparent, not real." Or again, "This is not true happiness, though outwardly it appears so." He is on safe ground in these assertions, for his words have behind them the authority of the mind over its own ideas.

Here, then, are two fundamentally different explanations of why the speaker believes that there is a connection between freedom and happiness. The former of these, that which concerns what has been observed, is of the nature of what scientists call a "law," a generalization about facts. The latter, the assertion of a connection between ideas, may be called a rule or principle, and belongs wholly in the world of theories.

### EXERCISES

1. The student should review the remarks in Part I, Chapter I, about the difference between a grammatical subject and a logical subject, and then attempt to determine what is the logical subject, the real matter under discussion, in each of the following assertions.

- (a) All art is an imitation of nature.
- (b) A great fortune is a great slavery.
- (c) Riches for the most part are hurtful to them that possess them.
- (d) We learn not at school, but in life.
- (e) To regulate household affairs and attend to her children is the highest recommendation of woman.
- (f) No expectation can allure a good man to commit evil.

2. Do the assertions in the list above relate to fact or to theory? Let your answer be determined by the sort of reasoning you would use in attempting to prove them.



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3. Are the following to be regarded as statements of fact or statements of theory?

(a) It is not strange that there are some differences between the language of the people of England and that of the people of the United States.

(b) Inflectional languages are those which, as in the Latin, consist largely of stems which change the termination to indicate case, tense, number, etc.

(c) One will always write best about that of which one knows most.

(d) It is impossible to express ideas unless one has ideas to express.

(e) After the matter has been gathered, the next thought must be directed upon the manner in which it is to be expressed.

(f) The natural order and logical sequence in a sentence should be observed.

(g) The great difference between history and fiction is that the events recorded in history are true, while fiction deals with purely imaginary circumstances.

(h) By the growth of democracy is meant the admission of the people to a larger share in administering the affairs of the country.

(i) There are republics in fact which are not so in name, and there are republics in name which are really monarchies or empires.

(j) Under the right conditions, it is to be expected that the republican form of government will confer upon a people stability, good order, and such progress as no other form of government can secure.

4. In Part I, Chapter III, Exercise 2 (b), which are statements of fact and which statements of theory?

5. In Part II, Chapter III, review Exercise 1.

6. In Part II, Chapter V, Exercise 2 (b), distinguish the statements of fact from the statements of theory.

## CHAPTER II

### EVIDENCE: TESTIMONY AND AUTHORITIES

STATEMENTS about facts cannot be verified by reasoning processes. The objects and events upon which these statements depend have a fashion of behaving as they please, quite independently of all our principles of thought. All that can be done, then, is to watch them and faithfully record whatever, in their own good pleasure, they choose to be. The result of such observation puts us in possession of what we call evidence, and is the only means of testing the correctness of statements about facts. Truth, in such statements, is a conformity between the meaning of words and the actual conditions; and the search for truth is the testing of the value of evidence.

Evidence may come to the observer directly, through the exercise of his senses, or indirectly, through the testimony of others. Direct evidence, and the difficulty of obtaining it in a trustworthy form, have been spoken of already, in the chapter on Observation. As to the evidence that comes indirectly, through the statements of other people, any test of its value involves the attempt to weigh the testimony. Here one brings into practice first the legal principle that the person on trial should be given the benefit of the doubt; unless a motive can be shown for untruthfulness, the speaker must be credited with stating the truth. In a general study of testimony, however, such as a business man might make before crediting a report, it is fair to go much further than would

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be permissible in a court of law. One may justly take into consideration all the conditions under which the words were spoken or written. Much help may be had, too, from a study of human nature, with all its whims and foibles. In Exercise 3 of this chapter, for instance, before deciding to credit or to distrust the student's theory of his character, it is wise to consider not only the conditions under which "themes" are usually written, but also the probability, judged from one's general knowledge of character, that a person really "mulish" would be in a position to understand his own temperament, or would be disposed to boast of it. Even when exact statements are attainable, vanity sometimes leads the mind to despise them. Men have been taught to speak, and especially to write, for effect, rather than with an eye to truth. They feel that guarded statements are undramatic. They fear to put the audience to sleep, or to appear as men of few ideas. Working in this spirit, observers prefer, in lieu of specific assertions, loose statements of preference. They tell you that a face was "pleasant," when they cannot even remember the color of the eyes. They record that a neighborhood is "desirable," without being able to describe a single phase of the social life. Thus the principles of human nature sometimes conspire to damage the value of testimony. It is the standing assumption that our informants are telling the truth; but, as we all know from personal experience, the assumption becomes less and less strong in proportion as conditions are found which might lead the speaker to believe that a little drawing of the long bow would be agreeable to others, or benefit himself, or even set him forth as a man of superior intelligence.

Fortunately for the literary and scientific worker, there is always available for his specialty a mass of tested evi-

dence in the printed books and articles of recognized authorities. In professional subjects, involving an advanced course of school training, a considerable amount of time is devoted to preparing the specialist to handle the literature of his topic. Outside one's specialty, also, there are periodicals and reference books of general information. By the intelligent use of these, it is possible to settle many small questions absolutely, and to get a comprehensive view of many other matters met in current discussion. Such books range from the cyclopædia down through all sorts of special manuals to the dictionary. Another kind of publication provides abstracts or titles of all important articles appearing in the magazines and reviews. The value of the testimony offered is to be judged by what is known of the writer, or, failing that, the publisher, the purpose of the book, and the date of publication.

The second consideration in judging the value of testimony is the probability of the statements themselves. This each of us must determine for himself, reasoning from the analogy of his own experience. As a rule a thing which has never been experienced is likely, at least to unimaginative minds, to prove inconceivable; and probability may be sufficiently well described as resemblance to what is already known. In the exercise already referred to, for instance, the student's story of his irritation at "Yale hats and Yale cravats" may strike the enthusiast as absurd, but it is likely to seem convincing enough to one who has himself rebelled at the expansive manners of a certain sort among college students. So it happens that lack of knowledge of life breeds suspicion and shuts out as improbable a lot of testimony which might open up new worlds of fact. As one gains in experience one becomes, not perhaps quicker to believe, but at least slower to reject the statements of others.

Again the value of testimony may be judged through what can be known, on the face of the matter, of the difficulty or ease of getting at the facts. Experiences are more or less difficult to obtain, according to the nature of the fact to be tested. Often it is necessary to read many books, to interview almost inaccessible people, or to grope for days in a foggy memory, merely to be in a position to write two or three sentences; and even then it must be a lucky or a bold man who can avoid the word "perhaps." Statements which relate to one time and place, when verifiable at all, present the simplest case. If Charles had oatmeal for his breakfast, the fact may easily be established. For himself there is the evidence of the senses; for others, the option of taking his word for it, or obtaining the testimony of the rest of the family. Statements which relate to a general idea, and pretend to tell what has occurred everywhere or always, present a much more difficult problem. Take such a statement as is found in Exercise 1, Part II, Chapter III: "In these families the second generation, the boys and young men of thirty years ago, was generally unsuccessful." If one is disposed to examine closely into the value of evidence, it must be plain at once that here is an assertion extremely hard to verify. Knowledge of the facts presupposes thirty years of close observation of not less, probably, than a hundred families, and, toward the end of that period, knowledge by correspondence or verbal report of events in distant places. In simple truth no casual acquaintance with a neighborhood will yield this degree of information, but only the systematized effort of a business agency. Here the evidence is under suspicion because of the wide range of facts that it covers; and the case is by no means exceptional. Many of our statements, especially such as are loosely circulated in conversation, have at

bottom no better warrant of accuracy. They are offered with the best intentions, and for lack of anything better, to break the silence. In a world where the exact truth is so hard to come by, many assertions pass muster with an "every" or an "always" which in reality are entitled only to "in most cases" or "so far as I have observed." Many masquerade as true to facts when their actual verification is in the nature of the case impossible. All we ask of them by way of title to the name "fact" is that in some form or other they shall theoretically be capable of comparison with some condition in the actual world.

Thus it is no wonder that absolute agreement as to statements of fact is usually beyond hope. In a very few cases, carefully guarded by mathematical theory, the results of different observers correspond closely and show a kind of relative accuracy sufficient for most purposes. Of absolute accuracy there is none. We can never, in the case of matters of fact, be said to attain to that sort of certainty which in matters of theory characterizes proofs.<sup>1</sup> We see things with the senses which have developed in us, but these represent by no means the limit of development. In the senses of smell and hearing, at least, many animals excel us. What more highly developed powers might reveal we cannot even imagine, but at least we know that every improvement in instruments of observation, like every change in theory, brings to light a new world of fact. Moreover, such part of our knowledge as comes from the testimony of others must be taken for what it is worth, with all the chances of misrepresentation. At present, then, when all pains have been taken in observation and all the evidence is in, we must usually content ourselves with the acknowledgment that our statements of fact are not absolutely exact,

<sup>1</sup> See Part III, Chapter V.

but merely an approximation from our present point of view.

Under these conditions the test of accuracy in statements of fact becomes wholly a social one. The final question is not, What is absolutely exact? but, What would be the average conclusion of the most favorably situated and experienced observers? Such a court of final appeal might decide incorrectly, but, provided their decision were unanimous and no one presented a higher type of authority, their verdict would, from the human point of view, be accurate. It is quite possible we may all be wrong, provided we are all wrong in the same degree.

#### EXERCISES

1. In what way does the question of evidence arise in connection with Exercise 1, Part II, Chapter III?

2. Examine the pretended statements of fact in the following argument. What is their value? Is any of them sufficiently a matter of common experience to require nothing more than the assertion?

Some people think that the daily newspapers intrude too much upon the personal affairs and home life of the family. This is perhaps partly right and partly wrong.

In the first place I think that people should discriminate between the respectable papers and the sensational ones. The reckless papers do often invade the department of private affairs. But these papers are few in number compared with the respectable papers.

In the second place we should consider carefully what is really private and what is not. If a person lived entirely alone, all his affairs would be private; but as soon as another person comes and lives with him his individual freedom decreases.

The authority of the church and perhaps of the state is diminishing, but the daily papers search into and reveal the devices

which evade the law; thus their protection far outweighs their evils.

The relation of journalism to the home has been completely changed by modern conditions. Fifty years ago journalism was little more than writing political pamphlets, which contained a little news. But the newspaper of to-day is entirely different. We are dependent upon it in a great many ways. The merchant must have it for the general news and for the news which relates to his business. The housewife must have it for the reports of the things which interest her. In fact, everyone should read the daily paper if he wishes to keep in touch with the world.

The newspaper has become the power which controls our standards of living, education, fashion, and almost everything. The best papers have broadened themselves to the modern requirements and offer good incentives to broader knowledge.

3. In the following student composition test the chances that the student is giving a substantially correct account of his character and past life. The test rests on the answer to two questions: (a) Are the statements consistent and convincing, and (b) Is there probable motive for not telling the truth?

In spite of the fact that, ever since my childhood, I had done all the tinkering for the house and that I was never so happy as when using tools, my mother was determined to make a minister of me. To please her I went so far, during one of my terms at the high school, as to take up Latin; but I could never get a word of it through my head. After that term my mother gave up her pet notion and began to come round to my father's idea of sending me to the Sheffield Scientific School at Yale. Thus they debated what to do with me. I shut my mouth hard and let them debate; I had always been what they call a "mulish child."

Naturally as I knew my father had planned to send me to Sheffield, the more I heard of the place the more I was deter-



mined not to like it. Just at this time there happened unfortunately to be in town two of my acquaintances who were attending school at Sheffield. They could talk of nothing but New Haven and Yale. They had Yale hats and Yale cravats and Yale calls to whistle under each other's windows at night. I thought them too much inclined to put on airs before the rest of us who had never been to college, and was more than ever disgusted at the thought of Sheffield. This feeling became so strong that I even thought of trying to make up my Latin and enter college. A disagreeable old uncle of mine, however, urged a college course upon me strongly, and even offered to pay my way through Chicago University. I hated the old gentleman so heartily that I would have given up my turning-lathe if he had approved of my using it. His offer cured the college fever.

When I was thus undecided what I wanted, I met a graduate of — College, who brought me to a decision. He was the most discouraging man I ever talked to. He spoke highly of the scientific training here, to be sure, but said the entrance examinations were uncommonly hard. He doubted whether a country boy, with a patchwork schooling such as mine probably was, could ever pass. I saw in this remark a chance to defeat my father's plans and to show the graduate what a country boy can do. I began trying to fit myself for the examinations.

4. What grounds are there for accepting at their face value the statements made by the author of the letter in Exercise 1C, Part III, Chapter IV?

5. Test the value as evidence of your own opinions on the state of school spirit in your school. Consider especially the following points: your acquaintance among graduates, members of the instructing staff, upper classmen, members of your own class; your place of residence; the persons you meet and talk with during lunch hours and intermissions; your knowledge of school traditions;

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your participation in school affairs, athletic, social, and literary; your knowledge of other institutions of a similar sort.

6. Undertake as much of the reference work in Appendix B as time and the resources of the school library permit.

## CHAPTER III

### ARGUMENTS FROM RESEMBLANCE

THERE are many statements of fact which cannot be touched by evidence or observation. They may concern matters too deeply imbedded in the past or relate to mental phenomena or to possibilities of the future. Yet among such are the most vital questions of the practical life. Will the market go higher or continue to sink? In the present dispute am I more likely to succeed by persuasion or by a show of force? Since immediate action is demanded, I require some sort of probable conclusion on which to base it. In such cases there is no guide save a knowledge of similar things in the past and the belief that things similar in some respects will tend to be similar in all.

General statements concerning the behavior or the nature of facts are to be had in abundance. We make them ourselves out of experience; we find them everywhere in print. Indeed one of the most debilitating effects of general reading is due to the common occurrence of these sweeping assertions. Whether gullibly accepted or cynically denied, they tend to form unfortunate habits of mind. Most of them would probably not stand the test of comparison with actual conditions; many are based on an idea but ill adapted to the cases under it. They may be the old saws employed by the fireside weather-prophet, the "rules" for picking out a good horse or a faithful employee, or a summary of the few conspicuous

instances in a series. The most trustworthy and dignified among them are the so-called natural laws. These, at least, are careful compilations, checked by the evidence of men equipped to observe. Ordinary talk and reading, however, furnishes almost no instances of reasoning based on generalizations so worthy of respect as these.

These general statements from which we draw conclusions may, when their meaning is studied, be divided into those which relate to causes and those which relate to qualities. The law that evil living weakens a man's power of application indicates a connection between cause and effect. The waste of energy and the habit of pleasure lead through natural connection to inability to concentrate the mind. On the other hand the common assertion that a halo round the moon will be followed by stormy weather points to a connection between a sign and a thing signified. The halo is not credited with an influence in producing the storm, but is thought of merely as an earlier effect of that disturbance which will later result in precipitation. It may therefore be used as a sign, a present and outward indication of something which, being absent or hidden, cannot be as yet directly observed. The first of these two sorts of law, the connection of cause and effect, is treated in the following chapter. The second, which is based on the assumption that two qualities once found together will always be found together, leads to the various forms of reasoning from resemblance.

Reasoning from resemblance may be defined as a use of one's notion of the qualities of a class for the purpose of judging what is likely to be true in a new but similar case. This kind of reasoning may be illustrated with the following instance:

*Law:* Persons with small cranial capacity are likely to have a limited mental development.

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*Application*: Niccolo da Uzzano has a small skull.

*Conclusion*: Niccolo has in all probability an inferior mind.  
(See Exercise 3, Part II, Chapter II.)

Stated in more general form, the argument is as follows:

In most instances previously observed, cases marked *X* have shown the quality *Y*.

The present instance shows the mark *X*.

The present instance will in all probability have the quality *Y*.

In this example, then, there is a statement of what is generally true of a class, a statement that the present instance appears to belong to the class, and a conclusion drawn from a combination of these two facts. Such is reasoning from resemblance in its simplest form. It is, in short, an attempt to pass from knowledge of most individuals of a particular kind to knowledge of a special, new instance, which, for some cause or other, has not yet been definitely observed.

A second form of reasoning from resemblance is that which begins with a particular instance, or with several, and draws a conclusion about the whole class.

The present instances have the quality *Y*.

The present instances show the mark *X*.

All instances which show the mark *X* will have the quality *Y*.

The Rugby game has been adopted in California; it would probably be liked in colleges generally. Most of the men recently prominent in English affairs are Irish, Scotch, or Welsh. We may, therefore, conclude that the English mind generally is inferior to that of its neighbors. This method of reasoning, as was noted in an earlier chapter, is that by which general ideas grow up in the mind. In this way strangers travel abroad, or visit Cape Cod, and return with extravagant notions of the

manners, dialect, and habits of dress of the natives. The force of illustrations and concrete instances in developing an idea is due also to this thought relation. Finally, scientists employ it in the search for natural laws; and in this connection it has received the special title of "inductive reasoning."

By still another variety of reasoning from resemblance, the mind begins with a particular instance, passes to the general law, and then to another particular instance similar to the first.

The present instance has the quality *Y*.

The present instance has the mark *X*.

Some other instance which shows the mark *X* will probably have the quality *Y*.

(For, all instances that show the mark *X* may be assumed to have the quality *Y*.)

In the literary form of such reasoning it is common to omit all mention of the general law. If it has been well for Columbia to abolish football, it will probably be well for Harvard. The country went through a financial crisis during the last Democratic administration, and so we may look for trouble if the Democrats should win in 19—. Such are the forms commonly taken by such reasoning. This process, too, is one of very frequent occurrence in thinking. It usually passes under the name of "analogy."

In all these varieties of reasoning the weakest spot is likely to be the pretended general truth. Since it is a statement about fact, it rests upon observation and evidence, and shares all the fallibility which attaches to these. Have all the important cases been noticed? Probably not. When an observer starts with some general conception in mind, he naturally picks up such instances as

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agree with his idea and overlooks the rest. The rabid partisan in politics can tell you all about the successes of his party; of its failures he knows nothing. The melancholy man has a hundred instances to prove that the world is going wrong. So too with systems of weather prediction. Whatever a man believes in, whether it relates to groundworms or to the moon, two or three verifications in a lifetime are enough to make him certain that his predictions have always come true. This tendency, so plainly observable in laymen, affects in a measure, no doubt, even trained observers. The law of nature, once suggested, accumulates evidence in its own favor and makes the opposing cases harder to find. On account of these limitations, our generalizations about facts ought not, strictly speaking, to present themselves as statements of invariable truth, but only with the reservation that they represent an impression of what has usually held good in the past.

The first step in making use of such statements to reason from resemblance is the assertion that the new conditions are in all essential respects like the old. The present instance, because it shows the mark of *X*, will be like the other instances that have shown the mark of *X*; it will have the quality *Y*. Such reasoning would be safe only if you had defined a class marked *X* in such a way as to shut out all cases that did not have the quality *Y*. Then, however, you would be dealing with an idea; the occurrence of an opposing instance could leave you stranded on a theory. Outside the domain of ideas, close similarity is accidental rather than assured. Nature in its wealth of conditions never exactly repeats itself. So far is this true that even when manufacturers exert their utmost skill to produce a uniform product, each article that leaves the shop has, when closely considered,

a distinct individuality. Thus men who have studied engines tell us that no two of the same make and dimensions are alike. Each has its whims of action and must be coaxed into doing its best. In connection with natural objects or persons the same truth is far more evident. One who reasons that the world will continue to give him a living merely because it has always done so, or that it is safe to board moving trains because he has never yet been injured, is likely some day to find, hidden beneath apparent similarity, an uncomfortable and totally unfamiliar result. To be sure that any present instance, however simple, is in essentials like something already observed is a task requiring unusual knowledge and powers of observation; and it is the lack of this certainty which, more than any other factor, helps to reduce our reasoning from resemblance to the level of probability.

Sometimes even the pretence of finding a close similarity between the new case and those previously observed is dropped, and we take a rough resemblance for what it is worth. This happens when, for instance, we attempt to interpret other people's purposes or states of mind by their actions. So-and-so smiles; when I smile I am pleased, and he is more or less the same sort of creature as I am: he is probably pleased. A is about to invest his money in unlisted stocks; if I bought that particular stock, it would be because I was out of my head: A is probably crazy. To reasoning of this stamp we owe most of our conclusions as to the inner life of others. We hear words and observe signs which, if they issued from us, would indicate certain ideas, feelings, and purposes. We conclude, therefore, that there are similar mental states behind the same expressions in others. Such conclusions, though often enough wide of the mark, are on the whole not a bad guide with persons of our own



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race, particularly if in character and habits they closely resemble ourselves. With other races, and even more with animals, this sort of reasoning is but little to be depended upon. Yet we often try to apply it, even to inanimate objects and to our notions of divinity.

Our conclusions from facts, then, unless derived from evidence, come to us, first, as the result of a reasoning process based on signs. We compare the facts with whatever in our past experience seems most to resemble them, and conclude that, as they are alike in one respect, they will be alike in all. This method of reasoning, however, can be safely applied only within narrow limits. Even in nature it is hard to find two objects or two events sufficiently alike to warrant the inference that they will resemble one another in qualities not directly observable; and between lower nature and man so great a gulf is fixed that almost no inference can hope to bridge it.

### EXERCISES

1. Most of the following general statements of fact are drawn from respectable sources in recent literature and have been made the basis of serious arguments. They are inserted partly to call the student's attention to the nature of what passes among us as fact. Any of them which falls within the range of the reader's knowledge should be tested as to its agreement with actual conditions.

(a) The efficiency of most of our public school systems is diminished by political influence of some sort.

(b) The best literature obeys the laws of paragraph structure.

(c) It is better for a young man beginning on a salary to rent a house than to buy on a mortgage.

(d) The most lasting results come to the deepest students, and rarely to the so-called practical man.

(e) A poor student at college is as likely as a good one to be a success in professional work.

(f) Precocious children are likely to be stupid or commonplace adults.

(g) It is almost necessarily true that membership in a fraternity increases the expenses of college life, or at least tends to increase them unduly.

(h) A man will tell the truth about himself when it is to his advantage.

(i) If you see the dust blowing about the streets, you will find that stormy weather soon follows.

(j) A man who never looks you in the eye is not to be trusted.

(k) In the ordinary undergraduate scheme of morality any faculty rule may be broken and the punishment evaded under two conditions: First, if the rule lacks adequate enforcement, so that "everybody breaks it"; and, second, if the rule itself seems essentially unfair and unjust.<sup>1</sup>

(l) The four years of college life form habits from which the youth rarely breaks away in later years; if selfish in college, he is likely to be selfish through life; if his impulses are altruistic in college, he will have a deep interest in others ever afterward; if he cheats in the class-room, he paralyzes his conscience and lays the foundation of cheating in business; if he is good only when under the watchful eye of a proctor, he is not likely to make a safe clerk with whom to intrust another's business; if he bets in the football game, he has laid the foundation for gambling anywhere and everywhere.<sup>2</sup>

(m) It is even more essential that a student shall have done hard work before coming to college, than that he shall do hard work while in college. The previously trained mind can get a great deal out of college with comparatively little work. The mind that has not been previously well trained can get very

<sup>1</sup> Meiklejohn, "The Evils of College Athletics." From *Harper's Weekly*, 47: 1751. Copyright, 1905, by Harper & Brothers. By permission of Harper & Brothers.

<sup>2</sup> Fordyce, "College Ethics." *The Educational Review*, 37: 494. Reprinted by permission.

little out of college even by hard work. This may be a stumbling-block to the school man, and foolishness to the university man; but the college man knows that in spite of these criticisms from below and from above an amount of leisure can well be afforded in college which would be fatal in either academy or university. In order to be profitable, however, it must be the leisure of a mind previously subjected to prolonged and thorough discipline.<sup>1</sup>

(n) Take, for instance, that part of college life into which the average boy throws himself with most enthusiasm,—athletic sport,—and see how far our students have fallen below the ideal of honesty, how far they still remain from a clear sense of proportion. I recognize the place of strategy in athletics; and I by no means agree with the gentleman who stigmatized a college catcher as “up to all the professional tricks” because “he made a feint of throwing a ball in one direction and then threw it in another,” yet the necessity of trusting a game to what the umpire sees is deplorable. A whole-souled and straightforward young athlete told me once, with smiling good humor, that a football player in his own college (who had everybody’s respect) owed his success in the game to a knack of holding his opponent in such a manner as made his opponent seem to hold him. Few college catchers, I suspect, systematically resist the temptation of pulling down a “ball” to make it look like a “strike”; and many cultivate skill in this sleight of hand as a cardinal point in the game. Even players who trip others, though in public they may be hissed and in private talked about as “muckers,” are likely to remain in the team, and in some colleges may become captains (whereas a freshman who breaks training by smoking a single cigarette may be “queered” for his whole college course). Many ball players use their tongues to confound or excite their adversaries; and whole armies of students, supported by a well meaning college press, make a business of “rattling” a rival team by what ought to be an inspiration and not a weapon, defensive or offensive—

<sup>1</sup> Hyde, “The College Man and the College Woman.” Reprinted by permission of Houghton Mifflin Company.

organized cheering. The youth who plays a clean game is admired, but not always followed; and the doctrine of Mr. Henry L. Higginson and Mr. R. C. Lehmann, that a clean game comes first and winning comes second, though it strikes undergraduates as faultless in theory and as endearing in the men who preach it, is not always suffered, in a hard game, to interfere with "practical baseball" or "practical football," — expressions used among undergraduates much as "practical politics" is used among men of the world.<sup>1</sup>

2. Compare the following selection with the outline which accompanies it and see whether it appears to you that the outline fairly represents the substance. Which of the arguments are based on resemblance?

The party leader of the Democratic minority, being as a rule uneducated, is unable to understand the principles which underlie his national platform. This is particularly liable to be the case because the party out of power will naturally form its principles in opposition to the practical measures of the government and thus base them on theory, speculatively correct, and dear to the student in politics, but abhorred by the practical man. Thus in years of reaction, when the Democratic party comes, as it were by accident, into power, it is unable to live up to its promises. Most of its leaders know little about the principles which brought them the independent vote, and care less.

The Democratic party cannot live up to its promises, for  
 The Democratic party has leaders that do not understand  
 its principles, for  
 The Democratic party has practical politicians as leaders,  
 and  
 Practical politicians cannot understand the principles, for  
 They cannot understand theory, and  
 The principles of the Democratic party are theory.

<sup>1</sup> Briggs, "School, College and Character." Reprinted by permission of Houghton Mifflin Company.

3. Study the following instance of analogical reasoning quoted from Darwin by Romanes, "Mental Evolution in Animals."

One of these [instances] consisted in a large dog, which, while playing with a stick, accidentally thrust one end of it against his palate, when "giving a yelp, he dropped the stick, rushed to a distance from it, and betrayed a consternation which was particularly laughable in so ferocious-looking a creature. Only after cautious approaches and much hesitation was he induced again to lay hold of the stick. This behavior showed very clearly the fact that the stick, while displaying none but the properties he was familiar with, was not regarded by him as an active agent; but that when it suddenly inflicted a pain in a way never before experienced from an inanimate object, he was led for a moment to class it with animate objects, and to regard it as capable of again doing him injury."

4. Pick out and comment upon the laws which underlie the reasoning in the following attempts to discover through resemblance the character of the writer of the composition in Exercise 3, Part III, Chapter II.

(a) The fellow who gave as a reason for entering college the statement that he had been a "mulish child" appears to have drawn on his imagination. He may have remembered hearing, or taking part in, a family discussion as to where he should go to college, in which his father had been in favor of Yale. He may have opposed this suggestion, as it is natural for all fellows to wish to select their college. Because of this act of opposition and a few other occasions on which he had been rather stubborn, he considered himself a mulish child and prided himself in it. As a matter of fact few children are eager to do as they are told, and they will complain bitterly when they are forced to do what they do not like.

His tendency to exaggerate is pronounced, and he is inclined to rash statements. For instance, his statement to the effect

that he would give up one of his favored possessions if a certain relative even approved of its use; another remark about Yale being a poor college because certain Yale men did not meet his narrow, countrified ideas. I do not mean that he was incorrect in his opinion of these men personally, but his haste to jump at conclusions from a few bare facts is noticeable. To my mind this is the way he came to imagine himself a "mulish child," because of a few contrary acts he had done during his early life. Otherwise there is nothing extraordinary about him, as he appears to have characteristics common to all young fellows, — such as ideas of their own importance and the inability of other people successfully to cross them in their desires.

(b) A man's opinion of himself is often likely to be different from other people's opinion of him. Hence, when we find him describing himself as obstinate or "bull-headed," we are inclined to doubt him; we should believe him more readily if he were talking of another. Now a man or boy whose parents wish to send him to college either has very indulgent parents or else has shown himself worthy of being sent to college. But, when he refuses to study Latin, and gives up a chance of assistance by an uncle, the second reason falls through, and we must admit that his parents have treated him very leniently, to say the least. And when a person's parents are indulgent, what are we likely to find? The boy grows up, always having his own way, doing what he wants to do and not doing what he dislikes; his opinion of himself becomes better and better and finally he says, with a good deal of satisfaction, that he always had a mulish disposition.

5. With the hints given below, attempt a discussion of the following arguments. Prolonged discussion of each is not desirable; the exercise is intended to train for flexibility and a critical habit of mind, not for argumentation. It will be noted by the acute that from other points of view some of these arguments might receive a different criticism from that suggested here. Analysis

does not produce facts, but merely views of facts; and the most that can be claimed for any particular view is serviceableness in the light of a particular purpose.

(a) Nothing else can so get hold of the spirit of the college as the physical struggle of an intercollegiate game. It is war; it is conflict—a trial of skill, of strength, of endurance, in which the chosen champions of either group go forth to battle for the glory of the Alma Mater. What our young men glory in is war—the war of muscle and wit, the fighting of chosen athletes for supremacy. Nothing else can so appeal to the imagination of a body of young Americans.<sup>1</sup>

(What is the general statement on which the argument rests?)

(b) Of course, the ideal condition would be to have the college world an absolute unit, knowing nothing of cliques or factions or divisions of any sort, recognizing community of interest in all things, each sharing in common prosperity because contributing to it, each solicitous as to the welfare of the other, each member of this democratic community a direct and positive blessing to each other member. But it happens that the world is all and quite otherwise; Christian nations contend with pagan and with each other as well; there is strife of creeds in the churches, and of parties in the political world; class makes war upon class in social life, and distinctions of rank or wealth or association are everywhere manifest—and the college is in the world and of the world. It is no indolent optimism, therefore, which as to your final decision bids you accept the fraternity, . . . and make the best of it.<sup>2</sup>

(How far does the resemblance on which this argument rests seem to you to be a real one?)

(c) We see parents (possibly we *are* parents) who bring up

<sup>1</sup> Meiklejohn, "The Evils of College Athletics." From *Harper's Weekly*, 49:1751. By permission of Harper & Brothers. Copyright, 1905, by Harper & Brothers.

<sup>2</sup> Canfield, "The College Student and his Problems." Reprinted by permission of The Macmillan Company.

children "along the lines of least resistance"; and we know what the children are. Is it illogical to infer that the children taught at school "along the lines of least resistance" are intellectually spoiled children, flabby of mind and will? For any responsible work we want men of character, — not men who from childhood up have been personally conducted and have had their education warped to the indolence of their minds.<sup>1</sup>

(In what ways is the case of the spoiled child unlike that of the person educated along the lines of least resistance?)

(d) "The practice of assisting young men through college in order that they may strengthen the athletic teams is degrading to amateur sport." This declaration, I repeat, is all-important; but it needs explanation to the perspective matriculate. It does not commend itself to his sense of fairness or of consistency. He is more likely to see in the offence inhibited, so far as it regards himself, not a *malum in se* but only a *malum prohibitum*. He knows that the practice of assisting worthy young men through college that they may strengthen some musical organization, or act as typesetters in the office of the college paper, is perfectly legitimate. "Why may not I," he asks, "pay in part for my education by my physical prowess, if my brother pays in part for his education by his musical talent?" The question is a natural one and should be answered before it is asked. Left unanswered, it tempts the student to evasion and duplicity.<sup>2</sup>

(Is the analogy as weak as the writer appears to believe? If so, why?)

(e) There is no doubt that the democratic spirit in our colleges is subject to more dangers to-day than it was fifty years ago. The old graduate is right in thinking that it is easier to keep up the democratic spirit where everybody is doing the same thing and where nobody has much money. But the old graduate is wrong in thinking that we can legislate ourselves back to

<sup>1</sup> Briggs, "School, College and Character." Reprinted by permission of Houghton Mifflin Company.

<sup>2</sup> Smith, "Honor in Student Life." *The Educational Review*, 30: 390. Reprinted by permission.



this condition when the world outside has passed beyond it; or that men trained in such a college as he remembers would be able, after they graduated, to meet the demands and the temptations of the present age. Lycurgus made Sparta into an old-fashioned college, with no electives and no money. How miserably the Spartans failed when they were called upon to do anything which made for human progress is a matter of history. Our college graduates are going out into a world of political life more complex than anything with which the Lacedæmonians had to deal. It is only by training them for the enjoyment of freedom and the use of wealth in their school days that we shall enable them to deal with the greater problems which freedom and wealth are creating throughout the country.<sup>1</sup>

(There are two arguments from resemblance here, but the more important is that which asserts that conditions inside the school must resemble those in the life for which the school trains.)

(f) To the old idea of culture some knowledge of history was indispensable. Now history is a representation of the stream of the world, or of some little portion of that stream, one hundred, five hundred, two thousand years ago. Acquaintance with some part of the present stream ought to be more formative of character, and more instructive as regards external nature and the nature of man, than any partial survey of the stream that was flowing centuries ago. We have, then, through the present means of reporting the stream of the world from day to day, material for culture such as no preceding generation of men has possessed. The cultivated man or woman must use the means which steam and electricity have provided for reporting the play of physical forces and of human volitions which make the world of to-day; for the world of to-day supplies in its immense variety a picture of all stages of human progress, from the Stone Age, through savagery, barbarism, and mediævalism, to what we now call civilization. The rising generation should think hard and feel keenly, just where the men and women who constitute

<sup>1</sup> Hadley, "Wealth and Democracy in American Colleges." From *Harper's Magazine*. By permission of Harper & Brothers. Copyright, 1906, by Harper & Brothers.

the actual human world are thinking and feeling most to-day. The panorama of to-day's events is not an accurate or complete picture, for history will supply posterity with much evidence which is hidden from the eyes of contemporaries; but it is nevertheless an invaluable and a new means of developing good judgment, good feeling, and the passion for social service, or, in other words, of securing cultivation. But someone will say the stream of the world is foul. True in part. The stream is, what it has been, a mixture of foulness and purity, of meanness and majesty; but it has nourished individual virtue and race civilization. Literature and history are a similar mixture, and yet are the traditional means of culture. Are not the Greek tragedies means of culture? Yet they are full of incest, murder, and human sacrifices to lustful and revengeful gods.<sup>1</sup>

(Study the analogy in the latter lines, and also the argument derived from likening life to a stream.)

(g) In these days great stress is laid upon what is called English, which includes grammar, composition, literature, etc. A few authors are chosen and children pore over these, commit some pieces to memory, and analyze them until they are tired out and disgusted. I speak from experience and wide observation. How many school children have ever heard a great piece of literature properly read? I was fourteen years old before any such thing came into my life, and I had unusual advantages in this respect. I was brought up on Whittier and knew many of his poems by heart without getting the least inspiration from them. One day I chanced to drop into a class in rhetoric in a neighboring college. The professor recited "Maud Muller" in a way that was a complete revelation to me. It was like opening the eyes of a blind man. I returned to the study of literature with a zest to which I had previously been a stranger. I thoroughly believe in the practice of making children commit to memory many pieces of poetry and prose, largely as a mental discipline of high value, but also as an aid to literary appreciation. I should like to have a fine reader spend his time in going

<sup>1</sup> Eliot, "Present College Questions." Reprinted by permission of D. Appleton & Company.

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from school to school, reciting some of the world's great literature, with appropriate comments. It would do more than all the text-books in existence.<sup>1</sup>

(An example of reasoning from an illustration. Is the experience narrated a fair test of the value of the system proposed?)

(h) What men were those who held the attention of these New England communities: Edwards, Hopkins, Bellamy, Emmons, Emerson, Parker, Channing, and Orville Dewey! Do not these names stand for the most original contributions to vigorous thought that have been made in the United States? These men were not callous to the finer things of life. On the contrary, they were men of kindly natures and delicate sensibilities. They were endowed with not a little of the reformer's zeal. Especially was this true of the remorselessly intellectual Hopkins, of the discriminating Channing, and of the critical Dewey, who all were leaders of the anti-slavery agitation in the days of its inauguration. And how were these men themselves trained? Not by any soft academic methods, much less by any modern system of cramming. In a memoir of Hopkins that is included in the collected edition of his writings, there is a significant account of the Yale curriculum of his day. The study of languages was completed in the freshman year, and exercises in logic were begun. During the second year, the first four mornings of every week were given to ethics and metaphysics. The third year was almost wholly devoted to physics, or natural science, and the fourth to mathematics. Here was, indeed, a remorseless system, and one indifferent enough to all super-refinements of sentiment. I should not wish to commend it; but at least it did not make scatter-brains, or dilettantes, or dabblers.<sup>2</sup>

(What questions must be satisfactorily answered before this can be accepted as partial proof that the results of the older education were favorable?)

<sup>1</sup> Rogers, "What is Wrong with our Public Schools?" *Lippincott's Magazine*, 85:218. Reprinted by permission.

<sup>2</sup> Giddings, "Democracy and Empire." Reprinted by permission of The Macmillan Company.

## CHAPTER IV

### ARGUMENTS FROM CAUSE

WHEN a general statement about fact asserts a connection between two events such that the first is believed to be necessary in producing the second, it is said to deal with the relation of cause and effect. Through such a relation it is possible again, as in the case of resemblance, to reach a probable conclusion about facts inaccessible to direct knowledge. One may start with either cause or effect and conclude that, since the one is present, the other probably is. The force of such reasoning depends upon two things: the assurance that *A* or *B* is actually present, and the belief that *B* always follows *A*. This belief, like any other matter which concerns fact, rests first upon observation; but behind the observation is a theory about the constitution of the world. We take it to be a place in which the sequences of events remain unchanged. If *B* is once certainly observed to follow *A*, it will continue to do so, other things being equal, till the end of time.

In any attempt at reasoning connected with cause and effect, common sense suggests certain characteristic questions. These the reasoner, if his mood be at all serious, must at least attempt to answer. A father, for instance, finds that his son is falling behind in his work and likely to be dropped from college. He suspects laziness, but needs to bring the matter to a test. It occurs to him that laziness is a likely condition. He knows that his son has no particular aim in his college career beyond the

somewhat vague one of cultivating his mind. Under such circumstances young men sometimes fall into idle habits. Here, then, is the first step in his investigation: the cause is a probable one; it may be deduced from the very idea of the conditions surrounding it. Next he would naturally ask himself whether such a cause is sufficient to produce the effect. In this particular instance, however, he is spared the trouble; all experience is at one in teaching that laziness is the death of scholarship. A more important question in the present case is whether there are other conditions that may account for the failure. Has the boy bad habits? Is he occupied excessively with athletics or society? Is his heart in some other kind of work, so that he lacks interest here? Are there evidences of a lack of ability? If all these questions are answered in the negative, if the student appears to try to do his work and keeps regular hours of study, there remains only one other point to consider. It may be still true that the suspected cause is present, but hidden by other conditions. The appearance of studiousness does not always imply the virtue itself. Long hours over a book are not necessarily study, and a man may take no part in social and athletic life merely because he is too lazy to do so. Such questions beset every attempt to reason about causes and results. As shown in the illustration, they occur in an attempt to discover a hidden cause; but they might equally well arise in any reasoning on the basis of a general statement of cause and result.

Even the simple illustration just referred to shows something of the complex conditions among which the mind works in dealing with sequences of events. Every event in the past is in some sense a cause of whatever action we are studying. Most of these influences are, however, imperceptible, and the mass of them lies outside

the range of the observer's interests. As a practical rule, therefore, it is important to remember that every event is preceded by many conditions which are not, in the ordinary sense, cause of it. In the five years following the abolition of football at Columbia the registration there caught up to that of Harvard and passed it; but whether the change in athletic policy caused the increase will be always a debatable point. In this problem, as in many others connected with causation, the reasoner must be contented with a suggestion of proof. A person deeply concerned over such matters will naturally adhere to one conclusion or the other with a firm belief; but his conviction will in no way hinder his opponent from believing the opposite, and often on apparently excellent grounds.

This complexity in the study of causes is usually somewhat simplified by the purpose of the moment. When a man asks, "What is the cause of this event?" we understand him to inquire either what was the chief influence in its production, or what may have happened, along the line of his interests, that played a part in bringing it about. Suppose a young man, in the ordinary phrase, "goes wrong" and forges his father's name to a check. Nothing in the whole history of his life, perhaps, was without influence on the catastrophe. The inherited weakness of the son, his dread of his father's severity, his choice of companions, and a thousand details, down to the most apparently unimportant incident, all had their part to play. The choice of which of these seems essential will depend largely upon the observer's interests and knowledge. The student of heredity will seek for the cause in the character of the boy's father; the student of social laws, in his companions; and the student of ethics, in his principles. In such a problem it is senseless to inquire

merely for "the cause." The observer may well hope, however, to find either the principal cause or that part of the cause which concerns a particular research.

So much concerns mere knowledge of the facts connected with causal sequences. As to the principle underlying this sort of reasoning, it is important to observe that there is no logical necessity behind any general statement of cause and effect. No generalization of this kind, even among the scientific laws, can pretend to the sort of certainty that is found in mathematical reasoning. To begin with, it merely covers relations which held good in the past, and so permits only a probable conclusion as to the future. If I have failed three hundred times to digest a breakfast of oatmeal, it is a likely thing that I shall fail on the three hundred and first; but, though it be the likeliest thing in the world, it is no certainty till tried. So it is in every case: we have no assurance that the result is forced to follow the cause; and, from certain knowledge, can assert no other connection save that of the order of time. If on rising for the day a man says to himself, "My life is a failure. This day is to add merely one more to a long series of defeats," he may, if asked, explain his meaning in one of two ways. First, if not well acquainted with the philosophy of life, he may give reasons for his belief. "I shall never learn self-control," we imagine him saying, or "I was born with so many inherited tendencies towards evil that I shall never reform." Granted either of these statements, the hearer will be able to see a logical connection between them and the speaker's main position, and will understand the hopeless frame of mind. This, however, is not the relation of cause and effect, for the speaker has merely given reasons for a statement of theory, an estimate of his life based on an ideal. He is talking, not of what is, but of what must be true. On the other

hand, a more philosophic man in the same position will be likely, when asked why he thinks his life hopeless, to seek for the causes of the feeling. "I have eaten too rashly overnight," he will say, or "I have slept in an insufficiently ventilated room." There is no rational connection between these indiscretions and despondency. The most that we can say is that they are observed to produce melancholy, — nobody quite knows why. When they go before in time, the evil frame of mind generally follows; and the generalization which connects the two is merely an unexplained statement of what happens.

Thus the type of explanation which refers single events to general laws of cause and effect is satisfactory only on a superficial view; when more closely considered it proves empty of reason. All our general statements about facts are mere answers to the question, How? They do not explain, but merely record. This is true even of those derived through careful scientific research. The names applied to some of the better known laws of nature have become so familiar that we tend to mistake them for real qualities and powers, and think of them as explaining the inner nature of events. It requires no great study, however, to see that even the broadest scientific laws are mere records of totally unexplained traits in the character of nature. When Newton summed up Kepler's three laws of planetary action into a single formula and gave it a name, people at once caught up the idea that he had made an analysis of "matter" and found it to contain a somewhat called "gravitation." The popular imagination would have it that this discovery was comparable to the process of dissecting a body and finding arsenic in the stomach. In the same way men took, and in a measure still take, this gravitation existing in all matter to be the cause of motion, just as the arsenic would have been the



cause of death. The moment we stop to think, we realize, of course, that gravitation is only a convenient name for mathematical statements which sum up the movements of the planets. It no more explains those movements than a player's score explains why he plays a bad game of golf. So it is with all the laws of nature. They are voluble enough in answer to the question, How? but on the question, Why? completely silent. Hence all inference about the future based on general rules of this character is a step into the dark. Probability it may have in any degree; but it must always lack the certainty of mathematics.

### EXERCISES

1. Exercise 1, Part I, Chapter I, is an example of reasoning from cause in which nearly every statement of causal sequence is doubtful. Analyze the selection again from this point of view and criticise the laws of cause and result which underlie the argument. Note especially the following:

(a) The fate of a school depends upon its students and alumni.

(b) Success in major intercollegiate sports is helpful to the reputation of a school. (What must be summed up under "the reputation of a school" if the idea is at all accurately employed?)

(c) Lack of interest in undergraduate athletics (or in the welfare of the school?) is caused by selfishness.

2. In the following statements of causation, what is put forth as the cause and what as the result? .

(a) If a man is naturally of a formal and pedantic turn of mind, the life of a teacher will tend to make him more so.

(b) Half the weakness and folly of college students comes from their not knowing any better. If they knew where their

professors stood on moral questions, they would tend to stand with them.

(c) The lack of sound individual training in early school years is shown by the number of those who fail and become discouraged in the lower grades and leave school as early as the law permits.

3. Test the following arguments according to the suggestions in each case.

(a) There can be no proper working of school spirit without enthusiasm, for only by enthusiasm can the individual be lifted out of his personal selfishness and made to care for the good of the common body. (What is the underlying law of cause?)

(b) No engineering school can hope to inspire the love of its students as does a classical college, for it stands toward them in a relation merely commercial, and does not hold up the same high ideals of all-round development and service. (What is the underlying law of cause?)

(c) It is as an amateur that one enjoys sailing the most. Most of us are then in our youth, care-free; and everything appears only from its brightest side. As we grow older our lives become more and more complex, and our pleasures are thrust into the background, from whence they shine bright as ever, but more and more unattainable.

(What appear to be the writer's notions of the conditions which make enjoyment possible?)

(d) It is significant that the leaders in almost every avenue of life are the men and women who have had the good fortune to enjoy the blessings of higher education; since these college-bred men hold most places of honor, trust, and influence, it is imperative that the seats of learning should be dominated by the best of moral forces; we should adopt the maxim of the Prussians that "Whatever you would have appear in the life of a nation you must put into its schools."<sup>1</sup>

<sup>1</sup> Fordyce, "College Ethics." *The Educational Review*, 37:492. Reprinted by permission.

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(Give this argument in outline form, so as to show the statement about schools, the statement about life, and the connection between them.)

(e) Laziness weakens one morally as well as mentally; a loafer is incapable of ethical growth because his mental fibre is too dormant to assimilate moral nourishment; vigorous, persistent work of any sort begets concentration, self-reliance, and tenacity of purpose, all of which have a moral import. The principal value of athletics lies in the fact that nothing but the student's best efforts are tolerated on the field; such efforts have a reflex psychic influence of incalculable worth.<sup>1</sup>

(Trace also the results of laziness on self-respect.)

(f) But with all due respect to what kindergarten devices, child-study, and pedagogical predigestion can do to make learning attractive, the school must be essentially a grind on facts and principles the full significance of which the child cannot appreciate and which consequently must appear hard, dry, and dull. The world is so big and complex, the mind of the child is so small and simple, that the process of the application of the one to the other can scarcely be effective without considerable pain.<sup>2</sup>

(The underlying statement here appears to be that lack of understanding of a subject causes it to appear hard and dry. Are there no other causes at work which tend to make the child like his study better than is here asserted?)

(g) Here comes in to advantage the ambition of the athlete. Football begins with or before the college year. Training for football means early hours, clean life, constant occupation for body and mind. Breach of training means ostracism. That this game tides many a Freshman over a great danger, by keeping him healthily occupied, I have come firmly to believe. It supplies what President Eliot calls a "new and effective motive for resisting all sins which weaken or corrupt the body"; it appeals to ambition and to self-restraint; it gives to crude youth a

<sup>1</sup> See footnote, page 169.

<sup>2</sup> Hyde, "The College Man and the College Woman." Reprinted by permission of Houghton Mifflin Company.

task in which crude youth can attain finish and skill, can feel the power that comes of surmounting tremendous obstacles and of recognition for surmounting them; moreover, like war, it affords an outlet for the reckless courage of young manhood,—the same reckless courage that in idle days drives young men headlong into vice.<sup>1</sup>

(What is the underlying notion of the influence necessary to keep a young student from evil courses?)

4. Does the statement of cause announced in the following extract agree with your own experience?

Under the old régime it was unquestionably a most serious problem to give the children a full and free use of language. The reason was obvious. The natural motive for language was seldom offered. In the pedagogical text-books language is defined as the medium of expressing thought. It becomes that, more or less, to adults with trained minds, but it hardly needs to be said that language is primarily a social thing, a means by which we give our experiences to others and get theirs again in return. When it is taken from its natural basis, it is no wonder that it becomes a complex and difficult problem to teach language. Think of the absurdity of having to teach language as a thing by itself. If there is anything the child will do before he goes to school, it is to talk of things that interest him. But when there are no vital interests appealed to in the school, when language is used simply for the repetition of lessons, it is not surprising that one of the chief difficulties of school work has come to be instruction in the mother-tongue. Since the language taught is unnatural, not growing out of the real desire to communicate vital impressions and convictions, the freedom of children in its use gradually disappears, until finally the high-school teacher has to invent all kinds of devices to assist in getting any spontaneous and full use of speech. Moreover, when the language instinct is appealed to in a social way, there

<sup>1</sup> Briggs, "School, College and Character." Reprinted by permission of Houghton Mifflin Company.

is a continual contact with reality. The result is that the child always has something in his mind to talk about, he has something to say; he has a thought to express, and a thought is not a thought unless it is one's own. On the traditional method, the child must say something that he has merely learned. There is all the difference in the world between having something to say and having to say something.<sup>1</sup>

5. The following is a discussion of the consequences of wealth and poverty; but the author appears to ground his notions on the ideas rather than on the detail of fact. Has he omitted anything essential to notice in the conditions surrounding rich men and poor?

Of the undergraduates that come to us at a place like Yale I suppose that about two-thirds may be classed as positively good. I do not mean that they will always abstain from acts of foolishness; but that they can be counted to stand fast against serious temptation, to come out right of themselves, and to be an active influence in helping those about them to do right. Of the other third, only a small minority could be properly classed as vicious. But half of them are weak, and the other half are selfish to such a degree that they are not a positive force for good, and may readily become subject to serious danger if you give them too much freedom. Looking at these two classes side by side, the selfish and the weak, we find that there are more selfish men among the poor students and more weak men among the rich ones; so that the aggregate amount of evil and danger is just about as great for one class as the other. This condition is just about what one might expect on general grounds. The poor boy by his poverty has been protected from some of the dangers which beset the rich boy; but he has by that very fact been compelled to look out for himself in such a way as to strengthen all selfish impulses. The rich boy has been brought up under conditions which tend to make him generous and free-handed if he has any good stuff in him at all; but these

<sup>1</sup> John Dewey, "The School and Society." By permission.

conditions have heightened all the dangers that arise from thoughtlessness or weakness of will. I suspect that the net amount of strain upon the moral character is about the same for rich or poor.<sup>1</sup>

6. Attempt to develop the preceding idea more fully, and in the light of your experience, through a brief essay on the theme: What will be the natural fears and precautions of a wealthy man about to send his son to a large American college? of a poor man? Those who enjoy their work more in a dramatized form may turn this exercise into two letters from imaginary fathers to their sons.

7. Compare the following alleged influences of the size of the college with your own experiences and those of your friends.

It is often urged that the college gives a man the opportunity for firmer friendships, that he comes more readily into close contact with his fellows, that he knows more men and knows them better than is possible in the large university. The expression runs this way: "In college, a fellow knows everybody and everybody knows him; in a university, nobody knows anybody." There is much fallacy in this. In the first place, the value of acquaintance and friendship is not to be measured by quantity, but by quality. The close and lasting and sincere friendship of even one thoughtful, mature, strong man is of far more value than hail-fellow-well-met relations with twenty boys. The few men who spend hours together each day, intent upon a common task, or who sit about a seminar table, absorbed in common research or in common discussion, are far more stimulating and helpful to each other than are the Toms and Jims and Harrys who hurrah on the edge of the athletic field, or who always enjoy the light-hearted gayety which follows the close of a recitation — entirely natural and proper and even desir-

<sup>1</sup> Hadley, "Wealth and Democracy in American Colleges." From *Harper's Magazine*, 113:450. By permission of Harper & Brothers. Copyright, 1906, by Harper & Brothers.

able as all this may be. Further, the larger the number of students the larger the opportunity for choice — and choice plays no small part in forming helpful personal relations. And, lastly, there is a sense of common origin and common indebtedness and common pride which holds together even the thousands of graduates of the largest university. The sense of mutual interest and the willingness to exert oneself for a fellow-graduate seem quite as strong among the many as with the few, while the opportunities for helpfulness increase in direct proportion to the number of the graduates. An institution with a thousand alumni in each of the four great professions is more than five times as helpful to each graduate as an institution which has but two hundred representatives in each field; because, all other things being equal, the chances of contact are so increased, and the entire field is so much more completely covered, and the ratio of positively influential men is so much greater.<sup>1</sup>

8. Study a photograph of a painting or piece of sculpture, first collecting the facts and then attempting to interpret them in terms of character. A suitable subject is that already referred to in Exercise 3, Part II, Chapter II.

9. Reason out carefully the character of Naaman from Exercise 2, Part I, Chapter II. Note the general statements on which your conclusions rest.

An alternative exercise may be found in Stevenson, "The Beach at Falésa," in the portion which relates to the first visit of the trader to the devil-work establishment and the finding of the "Tyrolean harp"; or in the character of Attwater in "The Ebb Tide" (The Pearl Fisher).

10. Study the probable character and needs of the writer of the following letter. In the light of the con-

<sup>1</sup> Canfield, "The College Student and his Problems." Reprinted by permission of The Macmillan Company.

clusions thus drawn attempt to frame a suitable answer. Assume that you know the father, but have never met the son, and that in attending college the son would necessarily leave home during term time. Consider which of your conclusions depend upon cause and which upon analogy, and how the question of evidence needs to be considered in this piece of reasoning.<sup>1</sup>

I wish to apply to you for a little advice regarding my son and his prospects. You know that he has been fitting for college in the local high-school here, and expected to enter in a year more. Lately, however, he has made rather a mess of his studies and has failed conspicuously in his Latin and Greek. Indeed he tells me that he has taken such a dislike to the dead languages that he strongly desires not to be obliged to go on with his college course. This decision is naturally a great disappointment to me, for, as you know, I have always desired him to get a college training, the more so as I have seen the need of it in my own work. As I cannot believe that my son is naturally idle or vicious, I must conclude him right in saying that loss of interest is the cause of his failure in his studies. His mother believes that misunderstanding on the part of his teachers has had something to do with it; and thinks him of too sensitive a nature to do his best work where he is not appreciated. But that view is partly due, no doubt, to a mother's partiality. At all events we do not feel like forcing him to master subjects which he so strongly dislikes.

If he does not go to college, a scientific school presents itself as the natural alternative, and the school which you are attending seems most available. I do not know that my son has shown a fondness for any special branch of science, but he has certainly had more luck with mathematics than with other things. Know-

<sup>1</sup> The letter is inserted merely as an illustration of one sort of exercise in logic. The details need careful adaptation to the class. This kind of exercise represents fully a variety of logical problem that business men find confronting them daily in the morning mail.



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ing that you have recently entered on a scientific course at —, I thought you might be able to give me some information. Do you think my son would be able to fall on his feet there and choose a course, even though his ideas of what he wants are at present quite hazy? Do you think he could find stimulus enough to get him once more into the habit of work?

## CHAPTER V

### ARGUMENTS FROM DEFINITION

THE distinction has been already noted between facts and theories, between what is supposedly true and what ought to be or must be true. With statements concerning facts, the defence rests, preferably, on evidence. Facts, if given the opportunity, speak for themselves; and so any dispute as to what they are has a fair prospect of being brought to a conclusion. When we find them so inaccessible as to be unable to speak for themselves, we substitute for evidence one sort or another of reasoning. Knowing what similar facts are, we conclude what these will probably be; or we study them in the light of their causes or effects.

Statements of what ought to be or what must be, on the other hand, require a wholly different treatment. Nature knows nothing of ought or must; these rest on definitions, in determining which the chief part is played not by facts, but by the mind. Statements of theory, therefore, can be defended only by the assignment of reasons, which deal with ideals or with the relations of ideas. "No man should fear death" is, for instance, a statement about the true ideal of manly conduct. It would be spoken, if at all, for instruction and encouragement, and so presumably to persons who had never learned or had forgotten the true relations between courage and manhood or the true notion of death. In either case the assertion would be impressive in proportion as it was

unfamiliar, and so needed proof. The hearers would take it for granted that the speaker had in mind a reason for his position, which for them was likely to be, after all, the vital part of what he had to say. This reason they might very probably demand, and the speaker, in presenting it, would give his proof. In this case the first two steps of the proof may be supplied as follows: the Reason, — Death is but the passage into a higher state; and the Conclusion, which rests upon the Reason, — No man should fear death. This proof, thrown into a form better calculated to show the relations of thought, would run as follows:

*Conclusion:* The true notion of death has no terrors, for,  
*Reason:* It is merely the notion of passage into a higher state.  
 Still further simplified:

$D$  is not  $T$  for  
 $D$  is  $P$

Here are two statements of theory, two expressed relations between ideas. The notion  $D$  excludes the notion  $T$  because it includes the notion  $P$ . Henry is not sitting in the chair, for William is sitting in it. If this is a valid reason for excluding Henry from consideration, it must be so on the basis of some general principle, such as would exclude not only Henry, but Tom and Dick as well. Such a general principle exists in the natural law that two bodies cannot occupy the same place at the same time. In a similar way, if the presence of  $P$  in our proof excludes  $T$ , it must do so by virtue of some general rule governing the relation of  $P$  and  $T$ . The rule is that a mere passage to a higher state, in whatever form you take it, is nothing to be afraid of. This rule, like many other rules in arguments from definition, is so simple as scarcely to require statement, and almost to escape notice. Its very

usefulness, indeed, depends upon its being self-evident; for it states a principle which, unless one felt sure that it operated everywhere and always, would have no convincing force in a particular argument.

The whole process of proof, then, embodies three steps. In this case they may be written in generalized form as follows:

<i>Conclusion:</i>	$D$ is not $T$	for
<i>Reason:</i>	$D$ is $P$	and
<i>Rule:</i>	$P$ is not $T$ <sup>1</sup>	

The process here illustrated is general for all arguments from definition; wherever we study the relation between a statement and a reason, the same steps will be found to occur. Sometimes the Rule, sometimes the Reason is omitted, perhaps because it escapes the attention of the reasoner himself, and perhaps because he wishes to conceal it or thinks it sufficiently obvious; but in testing the validity of the reasoning it is essential to discover and examine both.

The Reason is often a definition based, or supposed to be based, on relations of fact. In such cases it is necessary to ascertain how far it corresponds to the reality it pretends

<sup>1</sup> It will be noticed that the proof here referred to is a deductive conclusion based on definitions. Treatises on formal logic devote most of their space to the so-called syllogism, somewhat similar to the form above, giving it a treatment as nearly mathematical as the nature of language permits. It is a subject of considerable complexity, which the student may well take up after he has mastered the fundamental principles of reasoning. In substance a syllogism may be based on a definition, a statement of the qualities of a class, or a causal law.

The form of analysis is in this chapter somewhat more precisely indicated than it was in connection with the other forms of argument, but the student's experience with logical analysis ought by this time to be such that he can use a set form without becoming a slave to it.

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to represent. Take, for instance, what might be called the proof of envy or ambition. B's life is a happy one: he lives in a fine house, smokes expensive cigars, does not go to his office till ten o'clock, and then sits all day at his desk in an armchair with leather cushions. In outline this proof would read as follows:

B's life is happiness	for
X is happiness	and
B's life is X	

As far as concerns the Rule, that the easy-chair and the cigars stand for happiness, that, from the envious man's point of view, is probably above attack. There still remains, however, the question of how far the facts cited in the Reason are really representative of the life of B. This may be answered by comparing the life as here described with actual conditions. Happiness with a chair, a house, and a cigar depends less upon the objects themselves than upon the ability to fill the chair, to rule the house, and to enjoy the cigar.

Again the Rule rather than the Reason is sometimes at fault. This is a likely condition when, as often happens, the Rule is drawn from what Jaques called "wise saws and modern instances." Men have a habit of justifying their conduct by referring it to so-called principles, which are, often enough, little more than the crystallized thoughtlessness of the chimney corner, made dear to them, like Mother Goose, by the associations of childhood. Suppose, for instance, the case of the education of Master Charles. His parents, being easy-going people, averse to the drudgery of discipline, let him run riot, and attempt to justify their conduct by repeating various catchwords about the development of the natural impulses, the freedom and joyousness of childhood, and the danger of "breaking the

will." Reduced to its lowest terms, their argument would run as follows:

*Conclusion:* Master Charles is as he should be for  
*Reason:* Master Charles is natural and  
*Rule:* Whatever is natural is as it should be

Whatever one may think of the Reason, the Rule, at least, is open to the charge of absurdity. The same principle may be heard in a thousand different forms: "The appetite is the best test of what is good for you," "Nature will provide her own cure," "Boys should not be forced to master subjects that they dislike," "Whatever is is right." The simple sense of the matter is that nature knows nothing of moral distinctions. These belong, not to the actual world, but to the world of theories; and the fact, if such it be, that Master Charles is natural has no bearing whatever on the question of whether he is good. Thus in this case the whole test of the argument may be made to depend on the examination of the Rule, to ascertain whether the relation it sets forth is, in reason, as general as the Rule pretends.

Examination of the Reason and examination of the Rule are the only two methods of attacking an argument from definition; and, conversely, if these two statements are admitted, the Conclusion inevitably follows. If one admits that Master Charles is natural and that to be natural is to be good, it follows, as two and two make four, that Master Charles is good. There is here the precise sort of demonstration which is attained in mathematics. It is based on the relations of ideas, and these relations in turn depend upon definitions, which are absolutely under human control. We may rely upon them, for, wherever we put them, there they are obliged to stay. Being creatures of reason, they behave in a

rational way. The uncertainty of all our other reasoning arises from the unaccountable capriciousness of facts; but in arguments from definition facts play only a minor part. Though they may suggest changes in definition, no one is obliged to make the changes unless he choose. Thus, if we admit the definitions, Master Charles must be credited with goodness whatever the character of his deeds. He may ring the door-bell, and break the windows, and choke the cat. His title to a halo rests on theory, and no mere fact can touch it. Precisely so the relation of diameter to circumference remains unshaken, though there are no circles in the world of fact.

The certainty derived from argument of this sort is, however, limited to those who are willing to agree with the definitions; and in definitions, as in other matters, to obtain a man's agreement it is necessary to please his tastes and to avoid conflict with his interests. The stable position of mathematics is due chiefly, perhaps, to the fact that it has the same bearing on the lives of all of us, and that this bearing is not too intimate. As we are not ourselves embodiments of the square or the circle, we care relatively little how these ideas are defined. In philosophy, theology, and political economy, on the other hand, the underlying ideals often touch unpleasantly on our interests, as in art, music, and literature they sometimes conflict with our tastes. A new theory of taxation may result in lessening one's income by some thousands; a new definition of goodness may remove one from the sheep to the goats. Thus all these subjects present bodies of theory which are and ever must be in constant unrest. Since men cannot agree on the definitions, the conclusions have no uniformity or generally acknowledged force.

In all such differences of opinion the basis of possible agreement is two-fold. One may appeal to reason or to

authority; one may assert that a statement of theory is nonsense, or that it does not conform to the usage of ideas established by those best fitted to judge. Reason, if the more convincing test, is the more difficult to apply, for it must rest wholly on an attempt to carry the dispute back to more fundamental definitions; and there the difference of opinion is likely to become even more marked than it was before. If Farmer Brown and his wife cannot agree on the question of what is a pretty hat, it is highly unlikely that they can agree on the definition of beauty. Thus the more hopeful recourse is an appeal to authority. Now and then this authority may be some group of experts, but in the larger view and in most cases it is the common sense of the race. The final test of truth is a social test. The evidence of this broader foundation may be seen in all solidly built systems of thought. They are the product less of the thinker than of the age. He attains the most useful theories who expresses in them the ideals of the majority of his fellow-men.

### EXERCISES

1. Imagine the following arguments of a timid rider who decides not to use his riding-crop on a restive Kentucky saddle-horse. Which are based upon resemblance and which upon cause?

If I whip this horse he will unseat me:  
 He is a nervous horse;  
 His ears are laid back;  
 He threw me last Thursday;  
 The last Kentucky thoroughbred I had would not stand the whip.

2. The following outline presents a variety of inferences as to the character of the writer of the letter in Exercise



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10, Part III, Chapter IV. It shows something of the nature and value of our conclusions about other people. The student should consider in detail as many of the arguments as time permits. What is the rule or definition on which they are based? Are they arguments from resemblance, from cause, or from definition? Where is the weak point in them?

The writer of the letter is:

- I. A travelling man: (*for or because* henceforth understood)
  - (a) Absent from home.  
Does not know family well.
  - (b) Does not write many letters.  
This one not businesslike.
  - (c) Feels need of college education.
- II. Business man:
  - (a) Absent from home.
  - (b) Tolerant attitude toward wife and son.
  - (c) Can write a letter that arouses sympathy.
- III. Not a business man:
  - (a) Letter not formal and stiff.
  - (b) Not compact and direct.
  - (c) Without business terms.
  - (d) Feels need of college training.
- IV. Educated man:
  - (a) Has seen usefulness of his education in business.
  - (b) Good language.  
(Colloquial because writing to student.)
  - (c) If self-made, would be more severe in training son.
- V. Self-made man; without regular education.
  - (a) Feels need of schooling in business.
  - (b) Knows little of schools.
- VI. Knows something of the college about which he asks information.
  - (a) Thinks it a desirable school.

- (b) Knows that mathematics are fundamental to scientific studies.
- (c) Latin and Greek not required.
- VII. Knows nothing of the college:
  - (a) Otherwise would not write to student for information.
- VIII. Does not believe in scientific training:
  - (a) Desired college course.
  - (b) "Alternative."
  - (c) Does not know influence of scientific school work in stimulating serious activity.
- IX. Cares for boy; sympathetic.
  - (a) Willing to believe best; accepts son's statement.
  - (b) Too busy to find out for himself.
  - (c) Tone of letter due to desire to appear impartial.
  - (d) Happy home.
    - Deference to wife's views.
    - Wife manages the boy.
- X. Indifferent; moved by sense of duty.
  - (a) Tone of letter cold.
  - (b) Lacks confidence in boy's ability; "luck in mathematics."
  - (c) Thinks boy idle.
    - "Cannot believe, etc.," is merely formal and polite.
    - Does not accept mother's view.
  - (d) Has not bothered to consult teachers.
  - (e) Student not proper source for one really interested.
  - (f) Has not looked into the case:
    - No information except from the boy.
    - Considers mother's view merely on its general merits.
    - If knew more, would naturally impart it to the one asked to advise.
    - Just awake to the difficulty.
    - Does not know the boy's tastes.

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XI. Has spoiled his son.

- (a) Much anxiety over the case.
- (b) Favored by mother.
- (c) Not forced to do disagreeable tasks.

XII. Not spoiled:

- (a) Father desires him to work voluntarily.
- (b) Knows he cannot succeed without aptitude.

3. Give each of the following proofs in outline form, and then examine both the Reason and the Rule.

(a) On the large city dailies all the editor has to do is to hire men who can report events and write them up in an interesting way, to employ reliable workmen to see to the printing of the paper, and then to find people to sell it. If his paper is interesting, people in general will buy it. To be sure, these papers have a great deal of advertising, but that will come of itself if the paper is popular. The country editor has no such easy time. ("Proof of envy.")

(b) The trust is a natural condition, the direct result of the law of evolution. As civilization advances, combination becomes more and more necessary. First the people divide into trades; then two men, engaged in the same trade, find it advantageous to combine, and so a partnership is formed. From the partnership comes the corporation; then a combination of corporations, called a trust. (From an argument that trusts are beneficial. Compare the education of Master Charles.)

(c) Freedom in the choice of courses cannot fail to be good for a man. After a man comes from the fitting school, where the work is prescribed and necessarily rather disagreeable, it seems to me that the freedom of thought and self-reliance derived from the free choice of courses will be of great value in forming and moulding his character. Though in school a boy is treated as a boy, would it be right to treat a man in college as a boy? And yet this is what the prescribed course does.

(d) It is not possible for a student to know much of anything when he is required to know a little of everything else.

(e) It is the proper business of the student to study. If the only real requirement is to pass certain examinations twice a year, if the student crams two weeks and loiters thirty weeks, he is demoralized. What is more demoralizing than to substitute appearance for reality? <sup>1</sup>

(f) Even if our life is a small, sheltered one, even if we have only our house or rooms to look after, things tend to get out of order, to pile themselves up in heaps, to get out of our reach and into each other's way. To leave things in this chaos is both unwise and unjust; for it will trouble us in the future and trouble the people who have to live with us. Yet it costs pain and effort to attack this chaos and subject it to order. Endurance of pain, in the name of wisdom and justice, to secure order for our own future comfort and the comfort of our family and friends, is courage. On the other hand, to leave things lying in confusion around us, to let alien forces come into our domain and encamp there in insolent defiance of ourselves and our friends, is a shameful confession that things are stronger than we. To be thus conquered by dead material things is as ignominious a defeat as can come to a man. The man who can be conquered by things is a coward in the strict ethical sense of the term; that is, he lacks the strength of will to bear the incidental pains which his personal and social interests put upon him.<sup>2</sup>

(g) There are many excellent men who are professionals. I make no criticism of them individually; I could not be interpreted as reflecting upon their honesty of purpose or their personal character. In the nature of things, in the common sense of things, a man who is employed to coach and make football teams, baseball teams, track teams, crews, what you will, is bound to be governed by the single thought of winning. It is his business; it is his reputation, it is his life's work, his success, his all in all to turn out teams that beat the

<sup>1</sup> Harris, "Shall the University Concern Itself More Directly with the Morals and Manners of its Students?" Proceedings of the National Educational Association, 1903.

<sup>2</sup> Hyde, "The College Man and the College Woman." Reprinted by permission of Houghton Mifflin Company.

combinations of a rival university. He must win in order to hold his job.<sup>1</sup>

4. Test the following arguments in accordance with the hints furnished with each.

(a) After all, athletics is simply one of the student activities. It is more important than the others, in social value, but not essentially different from them in any respect. In these recent years, however, it has been exalted to a place in the general university policy — it has become a method of advertising. Winning teams pay, we are told; they attract students, and with more students come better athletics, and so the fame and welfare of Alma Mater are assured. In this scheme of athletics the aim must not be clean, manly sport, but victories. This is the evil which is most fundamental, most subtle, most dangerous of all. Until this evil is done away with, little will be accomplished in the purifying of the athletic system.<sup>2</sup>

(Give in outline the reasons here implied for the assertion that intercollegiate athletics make it natural to prefer victory to clean sport.)

(b) A prescribed course in engineering, or in any field in which one subject follows another, and each is dependent on the preceding, has the respect of the student. He can see the causes which control, and he can see the end to which the work leads. No one complains of prescribed courses when the relation of subjects to the final end makes the prescription natural and inevitable. No medical student complains because anatomy, psychology, chemistry, pharmacology, and bacteriology are prescribed.<sup>3</sup>

(What is the relation to this proof of the statement that respect for a thing involves understanding of its usefulness?)

<sup>1</sup> Whitney, "Who is Responsible for the Commercialism in College Sport?" *Outing Magazine*, 46:485. Reprinted by permission.

<sup>2</sup> Meiklejohn, "The Evils of College Athletics." From *Harper's Weekly*, 49:1751. By permission of Harper & Brothers. Copyright, 1905, by Harper & Brothers.

<sup>3</sup> Jordan, "The Proposed Changes at Harvard." *The North American Review*, 191:446. Reprinted by permission.

(c) The thorough knowledge of something is the backbone of education. To know some one thing well, it does not so much matter what it is, is to gain self-respect. It gives a base-line by which one can measure the attainments of others. It helps us to "Know a good man when we see him," which William James has declared to be one of the greatest aims of higher education. Sound knowledge of any kind preserves its possessor alike from assertive vanity and from limp humility.<sup>1</sup>

(What is the implied ideal of the educated man?)

(d) It certainly is true that the radical point of failure in any life, if there be one, is ethical, and that the life of any college graduate cannot be regarded as successful which is a moral failure. Theoretically, at least, all thoughtful people agree that a noble life is better than one possessed of mere intellectual skill and stores of information. The most essential thing in the training of young people is the production of positive morality.<sup>2</sup>

(On what characteristic of the definition of true education is this truth based?)

(e) When we ask ourselves why a knowledge of literature seems indispensable to the ordinary idea of cultivation, we find no answer except this: that in literature are portrayed all human passions, desires, and aspirations, and that acquaintance with these human feelings, and with the means of portraying them, seems to be essential to culture. These human qualities and powers are also the commonest ground of interesting human intercourse, and therefore literary knowledge exalts the quality and enhances the enjoyment of human intercourse. It is in conversation that cultivation tells as much as anywhere, and this rapid exchange of thoughts is by far the commonest manifestation of its power.<sup>3</sup>

<sup>1</sup> See footnote 3, page 188.

<sup>2</sup> Slocum, "Shall the University Concern Itself More Directly with the Morals and Manners of its Students?" Proceedings of the National Educational Association, 1903.

<sup>3</sup> Eliot, "Present College Questions." Reprinted by permission of D. Appleton & Company.

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(What is the definition of culture on which the preceding proof is based?)

(f) The American college or university stands for social advancement as well as for intellectual discipline. The university is the gateway through which democracy passes to the refinement of its strength. Universities in the older countries assume for the most part certain social qualities which are here in the making. It is impossible to ignore the peculiar responsibilities which must be borne by the higher education in a country which is still new. Even in New England, there is a greater preponderance, in all our colleges, of those from new families — families, that is, which have not been represented before in college training.<sup>1</sup>

(Is the following a fair statement of the principle behind this reasoning: The school ought to supply all that the student lacks? If so, is the principle a wise one?)

(g) No game is fit for college uses in which men are often so knocked or crushed into insensibility or immobility that it is a question whether by the application of water and stimulants they can be brought to and enabled to go on playing. No game is fit for college uses in which recklessness in causing or suffering serious bodily injuries promotes efficiency and so is taught and held up for admiration. An extreme recklessness remains a grave objection to the game of football, and it also makes basketball and hockey as developed in recent years undesirable games.<sup>2</sup>

(What is the ideal of college sport behind this reasoning?)

(h) Manners cannot be taught — not, at least, the manners of a gentleman. On the inner side it means the training of the spirit, and on the outer side it means association. Manners come to be more and more manner — the whole bearing of a man. And this result — apart from the ceaseless working of the spirit — is a pure matter of form, and therefore the effect

<sup>1</sup> Tucker, "Shall the University Concern Itself More Directly with the Morals and Manners of its Students?" *Proceedings of the National Educational Association*, 1903.

<sup>2</sup> President's Report, Harvard University, 1905-6, p. 44.

of environment. It is the subtle distinction of manners that they come to us, not by what we do under our own initiative, but from what others are doing around us. Manners good and bad are communicated.<sup>1</sup>

(What is the implied definition of things that can be taught, and what the idea of teaching behind it?)

(i) But as we went from the field, my friend began to ask me questions. "Do you consider that sport healthy and normal?" he asked. "Did you see the slugging? Did you notice that the boys were cheering to drown out the other team's signals? Is it true that there are men on each team who had no right to play, under the rules? Do the students condone and encourage evasion of the rules? Is it true that preparatory-school players are attracted to the colleges by 'inducements?' Aren't there lots of other evils?" And when to all these questions I had reluctantly assented, he demanded: "Why, then, do you college men permit these things; why don't you stop athletics altogether? Isn't it better to have no games at all than to have them at the cost of fairness and honesty?"<sup>2</sup>

(Define the ideal of healthy and normal sport behind this reasoning.)

(j) First, then, why should we have intercollegiate competition at all? So far as football, baseball, and rowing are concerned, it is neither good exercise nor good fun for the participants. The training to which the men are subjected is far too severe and prolonged to be good exercise for a student. Games within the college, games between classes, dormitories, fraternities — these are far better forms of exercise from the standpoint of health and fun than is intercollegiate competition. But the value of intercollegiate competition is quite distinct from theirs — a value which justifies the sacrifice of fun,

<sup>1</sup> Tucker, "Shall the University Concern Itself More Directly with the Morals and Manners of its Students?" Proceedings of the National Educational Association, 1903.

<sup>2</sup> Meiklejohn, "The Evils of College Athletics." From *Harper's Weekly*, 49:1751. By permission of Harper & Brothers. Copyright, 1905, by Harper & Brothers.



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of time, of strength, and even, to some extent, of health. It is the value of furnishing a dominant social interest, of fusing together the members of a college community, of developing a college democracy, of creating a "college spirit."<sup>1</sup>

(In this instance of reasoning from an ideal can you add other points desirable in college sport?)

(k) You eat the bread the farmer, the ranchman, the butcher, the grocer prepare for you. You live in houses the forester, the stone-cutter, the carpenter, the mason, the painter, the upholsterer furnish for you. You wear the clothing which the shepherd, the plantation hand, the mill-operative, the shop-keeper, the seamstress, the tailor provide for you. You sit by the fire the miner, the locomotive engineer, the brakeman, the sailor, the teamster has built in your grate. Have you yet done anything for them that is worth as much as the things they are daily doing for you? If not, then look up to them with heartfelt gratitude and admiration, as the soldier says to the water-carrier in Kipling's lines:

"You're a better man than I am,  
Gunga Din."<sup>2</sup>

(What is the principle behind this reasoning? Is the weak spot to be found in that principle or in the Reason?)

(l) Moderate drinking and smoking undoubtedly have still a long lease of life. . . . That multitudes of people will continue the practice, and will do so under the impression, right or wrong, that they are doing what is wisest and best for themselves, there can be no doubt. Such people are not to be condemned as intemperate. Whatever the final verdict of physiology may be, so long as these people believe on the testimony of expert authorities whose judgment they trust, and on their own experience so far as they are competent to interpret it, that moderation in the use of alcoholic drink is good for them, they are wise and temperate in its use. For morality is not a matter of

<sup>1</sup> See footnote 2, page 191.

<sup>2</sup> Hyde, "The College Man and the College Woman." Reprinted by permission of Houghton Mifflin Company.

right or wrong opinion about physiological questions. It is a question of personal attitude toward the opinions which one holds.<sup>1</sup>

(Give a plainer, fuller statement of the implied principle. Are wisdom and temperance the whole of "morality" in a case of this sort? Or was it not the author's intention to imply that such people are also moral?)

(*m*) These two kinds of imagination — Dante's and Lyell's — are not comparable, but both are manifestations of a great human power. Zola, in *La Bête Humaine*, contrives that ten persons, all connected with the railroad from Paris to Havre, shall be either murderers or murdered, or both, within eighteen months; and he adds two railroad slaughters criminally procured. The conditions of time and place are ingeniously imagined, and no detail is omitted which can heighten the effect of this homicidal fiction. Contrast this kind of constructive imagination with the kind which conceived the great wells sunk in the solid rock below Niagara that contain the turbines that drive the dynamos that generate the electric force that turns thousands of wheels and lights thousands of lamps over hundreds of square miles of adjoining territory; or with the kind that conceives the sending of human thoughts across three thousand miles of stormy sea instantaneously on nothing more substantial than ethereal waves. There is no crime, cruelty, or lust about these last two sorts of imagining. No lurid fire of hell or human passion illumines their scenes. They are calm, accurate, just, and responsible, and nothing but beneficence and increased human well-being results from them.<sup>2</sup>

(What is the Rule in this proof? Is the Reason a fair statement of the facts in the case?)

<sup>1</sup> Hyde, "The College Man and the College Woman." Reprinted by permission of Houghton Mifflin Company.

<sup>2</sup> Eliot, "Present College Questions." Reprinted by permission of D. Appleton & Company.

## CONCLUSION

### THE POINT OF VIEW

It remains only to sum up in a few words the principles already covered. Our experience, our real world, is, as we have seen, too complex and transient to be completely and clearly grasped. Only parts of it, therefore, ever rise to the level of full knowledge and expression. These must first be selected by the attention from the current of half-formed ideas and possible sensations always sweeping through our minds. The attention, however, not only chooses and rejects, but it does so on definite and limited principles. That is to say, it takes up only what it has been trained to take, what touches the interest or has in it a familiar strain. The rest of our possible material for thought and expression retreats into the background or entirely fades away.

Even the parts of our experience which attention has selected do not get into thought unmodified. Our interest in them is strictly limited; we attempt only to measure them against our standards, the ideas derived from previous reasoning or thought, and to determine how far they fall short or exceed. This process brings to light merely such qualities as seem related to the momentary purpose. It gives a limited conception, and one which grows more and more restricted in proportion as we strive for detailed accuracy in observation and exactness in thought. After this examination has been made, we have as a rule no further use for the things themselves, but

substitute in their places the qualities we have found in them. So it happens, for instance, in judging men. Let a man enter the ministry and he becomes, for the thinking of most people, an animated catalogue of the Christian virtues. Let him enter the employ of a bank and he is thought of as a reliable machine for counting money. After these transformations nothing can cause more surprise than for the subject to come to life again and unexpectedly show human qualities which thought cannot reconcile with his profession. The same thing happens in all other connections; we use our experience as material for thought, but in thus employing it we disregard entirely whatever is unrelated to the purpose of our thinking. We make our subjects of thought what we please by the wilful selection of the ideas and ideals in the light of which we measure them.

These mental standards are the system of weights and measures with which we go forth to try the world. They are the character, the self, on the intellectual side. They represent, among other things, all the prejudices of our birth, early training, family history, and place in society. Even education plays its part in the forming of this character, for study fills the closet with new utensils, though it by no means enforces their use. In virtue of this equipment, each of us differs intellectually from all other people in the world. Our thinking is our own, and our facts are as personal as the expression of our faces.

It therefore follows, as a matter of demonstration and aside from questions of modesty or good taste, that no man can claim to have monopolized the truth or said the last word on any subject. The most he can pretend to is to give a clear and exact representation of things as they look from his point of view. There are, indeed, two claims by which a man may seek to dignify his point of

view above that of others. That is to say, he may assert that from his position one sees all that is essential in the reality, or all that is important. Neither assertion, however, should be taken too seriously. Since we do not know reality well enough to be sure which part of itself it would consider essential in the absolute sense, we can judge of the essential only as we judge of the important, in the light of a particular purpose. Moreover life teaches us again and again that, when a man becomes too much absorbed in a particular purpose, he is sure to let slip much truth of which he will later stand sorely in need. Aside from the question of accuracy, then, the whole matter of differences in facts resolves itself into a difference in purposes; and here there should be the broadest toleration. The highly developed mind will avoid the assertion that another's purpose is wrongly chosen, and will welcome all differences in aim, all varieties of point of view, as invaluable contributions to the activity, and even to the interest, of the world. Here, too, there is consolation for the timid and the self-conscious. The knowledge of the personal character of thought is likely to frighten such natures and to hold them back from expression. They fear to arouse ridicule, and in their thinking seek the safe level of the commonplace. Let them, on the contrary, take courage. The interest, and in some degree the value, of all work is dependent upon individuality of purpose and point of view. The attempt to adopt another's point of view, when not useless, is suicidal. The only serious chance of error in such matters lies, not in having a definite and personal point of view, but in lacking it.

One more consolation may be derived from a knowledge of the personal character of thought. In a mind which has firmly fixed its own centre there can be no confusion,

for no fact can enter there except as it takes its place in an order already established. Nothing can be strange, nothing can come amiss. Neither need there be any lack of material, for the world of mind, like the world of matter, adjusts itself to every point of view. It is perhaps one of the most surprising facts in our whole experience that, as soon as a man becomes thoroughly interested in anything, and wide awake at one point in his life, the universe seems to join in a kindly conspiracy to help him. New facts crowd in upon him, half-forgotten experiences return with a new meaning, chance reading is full of enlightening references, and he meets people whose thought is moving in a similar direction. If he misses any necessary idea, it will be because he has formed, and formed too narrowly, a notion that this or that in no way concerns him. It might even be said, without too much exaggeration, that a man has only to know what he wants and life will hasten to bring it to him; only to fix his centre and the world will group itself round him in a beautiful unity.

One sense there certainly is in which these words hold almost literally true. We have, namely, the power to determine in large measure the character of what we receive, through the point of view in which we look at it. As for people, it is notorious that their behavior toward us is governed by what we expect of them. The quickest way to get cheated is to anticipate deceit; and an open-minded confidence often begets nobility in others. As for facts, or rather the statements through which we know them, these are determined almost wholly by our point of view as observers. Is your life hard and uncongenial? There are open to you two purely mental methods of escape. First lower, for the moment, your ideal. Think less highly of what you deserve, or consider how small

are your actual needs. If this method fails to bring relief, you may "count up your mercies"; you may turn the attention upon those elements of good which are present in even the worst situation. These two means between them ought to be sufficient to transform the most stubborn fact. They rest, at all events, on principles which are fundamental in all thought.

Beyond the question of what things seem to the individual mind there lies, however, the more troublesome question of what they really are. In the conflict of opposing purposes and points of view we are sometimes obliged in a more or less arbitrary way to determine what is true and what is false, and this we must do on the basis of something more than personal opinion. Individual notions of truth will often need correction. They will require to be supplemented; and, curiously enough, the best source from which to supplement them is the one that most people avoid, — the notions of those that hold diametrically the opposite opinions. This must be true because of the very nature of thought. All thinking polarizes the world of fact and obtains clear conceptions wholly through contrast. Thus temperance is contrasted with indulgence, light with darkness, far with near. It is impossible, for the most part, even to define terms in words except by explaining what they do not mean. Indeed all ideas may be said to be one-sided, and, when they are applied to facts, they give a one-sided result. In such a method of thinking, used with a full sense of its deficiencies, there can be no harm; but who can boast of possessing such a sense? Under the conditions the safest plan seems to be to hunt up what was lost in making your own thought clear. Study the opposite. Learn constantly to contradict yourself. If you are given over to scientific methods of thinking, try

to understand what there may be of value in an artistic and literary point of view. If you are rich, learn of the poor. Find the man who stands at the other end of the diameter and make him your schoolmaster. He doubtless despises you and all your opinions, but this frame of mind in him is only a guarantee that he can offer what you need.

The attempt to profit by points of view which differ from one's own will be valueless without a degree of sympathy. There must be behind it, not merely the usual state of mind falsely called "openness to conviction," but the knowledge that one's opponent is, like one's self, a human being, and the shrewd suspicion that most differences of opinion are apparent rather than real. When the heat of argument has passed, we all do somehow think pretty much alike. This is fortunate, as the case stands, for, after all, the only test we can assign for truth is a social one. Both for facts and for theories, the truth must be defined as the conclusions of what may be called our common sense, the agreement of all those best fitted, in a given case, to know and to judge. This agreement, however, is not something foreign to the individual, but of the very nature of his deeper life; and the common sense is but the voice of the higher self. Within each mind there is an unending debate between the self of the momentary tastes and preferences and the self of the broader principles. The personal self is loud-mouthed, self-assertive, and argumentative. He keeps up a din in which the discovery of truth is next to impossible; but sometimes in the quiet one hears another voice. It is to this that the student of logic will desire to listen; for, since it speaks much the same message to all, it shows the only characteristic by which, with our present limits of knowledge, we are able to recognize truth.



We hear it sometimes said that the object of education is to teach us our limitations; and so we should do ill to conclude this book without a glimpse over the hedge into the much fairer fields of thought that lie beyond it. We have attempted to study merely that degree of assurance and that type of truth which may be reached through clear thinking. Beyond this, as everybody knows, is an entirely different method of arriving at conclusions, and one which, for lack of a better name, we sometimes call illumination. It is due, no doubt, to the dimmer and less definable workings of both the senses and the mind, the influence upon us of that large remnant of unbounded reality which our conscious thought has not taken into account. This influence is responsible for the thousand states of mind which cannot be clearly expressed in terms of logic. Here there is room for literature and the arts. Here too belongs what we term belief, that curious mood of denial of doubt which will not come at the call of either evidence or proof. So we may glance over the hedge, as a man casts his eye into a pleasant garden and passes onward to his work.

## APPENDIX A

### EXAMPLE OF LOGICAL ANALYSIS

BUT few long exercises have been introduced in this book requiring a direct use of the critical faculty. Such work can best be done, under guidance from the teacher, in connection with the student's own writing. Examples of faulty method in the work of others are likely to seem, like the sins discussed in the pulpit, rather remote from one's own experience. At the same time the following theoretical discussion has been annotated and is appended here, in the hope that it may serve for those unaccustomed to logical analysis as a sort of model of critical method, or that it may be useful in review. The discussion is, in a word, an attempt to fix upon an ideal and then to apply that ideal, with negative results, to a range of facts. One thing which comes out in a rather interesting way is the pains which the writer has taken to adjust his ideal so as to provide for a negative result.

#### THE HONOR SYSTEM

The discussion about introducing the honor system has had considerable interest,<sup>1</sup> and is justified, if only in reminding us that we have large questions to solve; but it appears not yet to have gone very deep.<sup>2</sup> Valuable facts have been brought out to show the workings of the system in other colleges. Some

<sup>1</sup> As is illustrated in the two following sentences.

<sup>2</sup> A proof, completed below, i.e. because it has not yet touched the question of school spirit.

hopeful<sup>1</sup> spirits have reasoned persuasively of its probable benefits, in raising the life of the school to an almost ideal standard. As a result of all these arguments most of us admit that it works in some places, and that, when it works, nothing could show a better state of health in a school. The only remaining question<sup>2</sup> is whether the honor system causes healthy school life or results from it. If it is a cause, we want it; if an effect and we reach for it prematurely, it is likely to be more bitter than a green persimmon.

The most striking aspect of the honor system is its instability. One man, perhaps, could hardly overthrow it. Six unquestionably could.<sup>3</sup> Its foundation is a lot of ideas not much heard of these days, except in the pulpit. They are enthusiasm, confidence, and love.<sup>4</sup> I am almost ashamed to mention them, and certainly should not if I supposed my doing so could be twisted into a personal endorsement.<sup>5</sup> I hope the breach of good manners may be excused, because I use the words merely as practical signs in the business of what I have to say. I know nothing more about their deeper significance than a barber knows of the history of striped poles.

<sup>1</sup> This word, and "ideal" below, are insinuations. They offer an argument from resemblance, based on the following law: The "ideals" of hopeful spirits are not likely to be worth much in practice.

<sup>2</sup> On the general principle that not everything which follows a thing is the effect of it. A question "remaining" in the sense of left over from the arguments referred to; but not, as might appear, to be solved in this essay. The answer would imply a study of school spirit before and during the experiment, in schools where it had succeeded and in schools where it had failed.

<sup>3</sup> This statement about fact is nowhere verified.

<sup>4</sup> An argument from resemblance, resting on the law: **Whatever** is founded on remote ideals is unstable.

<sup>5</sup> Ironical, of course. At the same time part of the **argument**: These ideals are remote, for they are almost unknown to the writer, and

If the writer knows little of them, what must be the case of the average mind!

Enthusiasm, — this state of things exists in some schools.<sup>1</sup> It is not merely cheering at a theatre, or passing a loving-cup at a dinner, though these things help.<sup>2</sup> It is more like a demoniac possession, the indwelling of a spirit greater than your own, which lifts you entirely out of yourself.<sup>3</sup> When a body of men march in a crowd, with however much cheering, the spirit is not necessarily there. It cares nothing for red fire, *per se*.<sup>4</sup> But when the crowd develops an ideal of conduct, and acts like an organized body to punish those who fall below the standard, the spirit goes before them as in a pillar of fire.<sup>5</sup> The average man feels touches of this possession but few times in his life — now and then, perhaps, when he rises in a crowd and takes off his hat to sing “America,” and once when his father first lays his hand on his shoulder and talks to him as though he were a man.<sup>6</sup> The member of a great school or college may feel it every day. With him it may become a sustained state of feeling which differs from insanity only in working continuously, consistently, and always for good.<sup>7</sup> Without this enthusiasm no system of school government will make men more than ordinary human beings, strongly tempted to do what is easiest and promises most momentary advantage.<sup>8</sup>

<sup>1</sup> Again an insinuation: A place where people need the assurance that it exists is not a place where it thrives.

<sup>2</sup> Here the ideal begins to be defined. Aside from the question of truth, the writer was probably aware that the presence of these things in the definition would spoil his proof.

<sup>3</sup> These statements are theoretical and are unsupported. The writer must be allowed to put into his ideal whatever traits he pleases.

<sup>4</sup> This is the only argument used in support of the ideal of enthusiasm:

The ideal is not unreasonably lofty, for

We have all seen it worked out, at least in some measure, in our own lives.

<sup>5</sup> This statement and the one preceding are not theories about an ideal, but statements about fact. The failure to back them up is therefore totally without excuse.

<sup>6</sup> The fundamental law of all this part of the essay: When men

Confidence, — the second requirement for the working of the honor system. Other things being equal, when we are trusted implicitly, we live up to what is expected of us.<sup>1</sup> The man who lives up to the honor system will do so, other things being equal, because he feels either that his instructors trust him or that the eyes of his fellow students are on him, with not the lurking shadow of a doubt that he will be worthy. Do our instructors trust us? Do they know us well enough? Have we given them the opportunity, or have we, perhaps, treated them as bloodless abstractions of the pedantic, suspicious, and thin-skinned school-master kind? Again, do we trust one another?<sup>2</sup> This too depends upon the degree of our acquaintance? Plenty of men will keep their seats in a car when a lady is standing, — but not if they know the lady. Plenty of men will cheat a railroad company of a fare, — but not if they know the conductor.<sup>3</sup> To know other people is to respect them; to be known by other people is to respect yourself. What keeps men straight under the honor system is the steadying sense, like the hand of a friend on one's shoulder, that everybody knows them and trusts them.<sup>4</sup>

Love, — the third necessity. The man who goes right under are left to natural conditions, they will work for their own momentary advantage. The reasoning should be followed backward from this point.

<sup>1</sup> This is not, as at first might seem, a law, but a Rule. See the implied Reason below (2):

Confidence with knowledge *must* beget trustworthiness, for  
It appeals to self-pride.

Here again the reader is cleverly cheated of his facts.

<sup>2</sup> This method of questioning works admirably — when it happens to succeed. Such are our habits in generalization that one fact drawn from our own experience is sufficient to induce belief about a whole class.

<sup>3</sup> In all these paragraphs the author develops his ideal and at the same time attempts to show that it does not exist in the school in question. The former purpose, though not the main end of the essay, is made temporarily to appear so through the structure of the paragraphs.

the honor system refrains from cheating, if tempted, because he willingly sacrifices his inclination for something that he loves better.<sup>1</sup> Enthusiasm, confidence, and love, — as in the case of the better-known trio, so here, the greatest is love. Without it the spirit of enthusiasm will not rage, and a school will have no life as a common body, but every man will be trying to get the better of every other.<sup>2</sup> Do we love our school? A feeling of some sort there undoubtedly is, growing stronger in recent years, but <sup>3</sup> not comparable to the swelling in the heart of a graduate of one of the best classical schools or colleges, when he thinks of the good old times. These men hear of the school from afar and enter it fired with a great ideal. They enter, in the better cases, not to make a bargain for practical knowledge, but to begin an ideal life.<sup>4</sup> The outcome of this life, they have always heard, is to be the development of character, the broadening of mind, and all sorts of possibilities for service to the community.<sup>5</sup> Our men also hear of the school from afar, but chiefly as a place where one may buy practical knowledge that can be sold later at a profit, — a first-class jobbing house for mental wares. Many of them enter it, on their own confession, with no stronger preference than that which determines the selection of the shop where they buy shoes.<sup>6</sup> Do they find anything to love here, or do they merely endure, as men endure arm movements in a gymnasium?<sup>7</sup>

<sup>1</sup> A proof:

Love is necessary to the working of the honor system, for Love means willingness to sacrifice one's own desires.

<sup>2</sup> A repetition of the fundamental law referred to earlier.

<sup>3</sup> Again, the arbitrary definition of the ideal.

<sup>4</sup> An unsupported statement about facts. It is, however, of such a nature that it could never be verified satisfactorily.

<sup>5</sup> To reiterate and elaborate an assertion is not, of course, to verify it, but for the careless reader the one often does as well as the other.

<sup>6</sup> An argument from resemblance, based on the law that profit and love cannot go hand in hand. It would be interesting to inquire why this seems true.

<sup>7</sup> An illustration of one case where the above law is known to hold good.

We may or may not be moving in the direction of these great influences; the vital point is that it seems doubtful whether we have arrived.<sup>1</sup> When the new song-book is fifty or a hundred years old; when the union of a Saturday night is a natural gathering place for all the outcast, even instructors; when the freshman signs his class constitution, even at the expense of paying his class dues; and when the acts of those whose names appear in this year's catalogue shall be but part of a great tradition of gentlemanly and brotherly living, — then the persimmons of the honor system may be ripe. As the experience of other schools shows, they can never be picked from the tree but once, and they are uncommonly bitter when they are green.

Enthusiasm, confidence, love. It is more difficult for an engineering school to arouse these feelings in its pupils than for a college. They are aroused only where large bodies of men work together,<sup>2</sup> but, more than that, only where they work together for the most lofty aims. In this respect the classical college has the advantage of us. Its claims, though indefinite and somewhat unsupported by results, are of the highest order. Its ideals wear the aspect of a large unselfishness and devotion to mankind.<sup>3</sup> If its students mistake the conditions of training and forget to learn anything about the concrete facts with which they hope later to do so much, those accidental mistakes do not at first impair the spirit.<sup>4</sup> They love their school, because it means to them the greatest things in life, ideals too great to be

<sup>1</sup> A fresh attempt to develop the ideal, this time through concrete examples. The notions evolved seem to be: The best school spirit presupposes school customs; fellowship; self-sacrifice in work and in money contributions; and high tradition. Here too the method of negatives is followed.

<sup>2</sup> The only support for this statement is found in the illustrations — "America," etc. — on an earlier page.

<sup>3</sup> These statements about facts are taken for granted.

<sup>4</sup> They do not impair the school spirit, — i.e. they are non-essential, for

They are merely "accidental," — i.e. non-essential.

Such proof as there is here moves in a circle. The Rule is a mere equivalence of terms.

intelligible, and therefore all the dearer.<sup>1</sup> As opposed to this the technical student has nothing so showy. He points to the material advancement due to science, and is met with the criticism, which his own heart almost endorses, that we are not a whit better men than they were in the days of Noah.<sup>2</sup> The best he can show is appliances for the comfort of the body and the preservation of health and life. The world feels, and he feels too, to some extent, that, if things are really going to the dogs morally, improvements in the gasoline engine and in the chemical analysis of sugar <sup>3</sup> are not much to the point. Then it says to him, "You are useful in a practical way and you get your pay; but expect no thanks."<sup>4</sup> And he says to his school, "I shall be glad to make a bargain for some of your best goods, but don't talk to me about the deeper things of life, for they are not in your line."

Meanwhile both the world and he are, of course, wrong. The man who masters fact is the only one who can hope for power. Not seeing this truth, the classical college has been tried and found wanting. Here, then, is the opportunity for the engineer. He may put forward the most lofty claims, but he must base them on his contributions, not to material progress,<sup>5</sup> but to knowledge. Scientific schools must be permeated, even in the most elementary subjects, with the spirit of research. Then men will flock to them, not from commercial motives, but from love.<sup>6</sup> Then they will be ready for the honor system; only it will not then be necessary.

<sup>1</sup> A law: What men cannot understand they tend to worship.

<sup>2</sup> A Rule: "Material" advancement is not real betterment.

<sup>3</sup> Neither of these is a fair sample of "material" advancement. The new work is here to be judged by the old standards of thought.

<sup>4</sup> It may be profitable to consider in what way, actually, the world would make these opinions felt. The statement takes its force from its opposite, which is that theoretical reformers are received with great signs of public gratitude.

<sup>5</sup> "Power" is the mastery of facts, and yet either does not lead to "material progress" or is not valuable on that account.

<sup>6</sup> To what this love will attach itself can be determined only by one who understands the difficulty referred to in the preceding note.



## APPENDIX B

### THE USE OF REFERENCE BOOKS

THE best general introduction to the use of reference books is Kroeger, *Guide to the Study and Use of Reference Books*, American Library Association, Boston, 1903. For the most recent books this is somewhat out of date. The method of study is much the same for all such books. The student should examine the title-page and the introduction or preface. These will give him some notion of the authorities quoted, the date of publication, the arrangement, and the scope of treatment. He should then study and attempt to use the table of contents and the indexes, noting particularly the system of cross-references, if any. Next should follow the reading of several articles on subjects with which he is familiar and a comparison of these with articles on the same subjects in other books. In all books which deal with topics at any length, it is important to note the length of the article, its authorship, if stated, and how it is arranged with regard to other material on the same topic. One should observe whether a bibliography is given and, if so, how extensive and how nearly up to date.

The following is a list of some important reference works with which the author happens to be familiar. When special methods of study seem advisable, they are indicated in questions and exercises following the various titles. Though most of the books are in common use, the exercises must, of course, be changed as necessary to adapt them to the resources of the school library.

## A. DICTIONARIES

MURRAY, J. A. H., *New English Dictionary on Historical Principles*. Oxford, The Clarendon Press. Completed (1912) through Vol. VIII, Part 1, and portions of later volumes. Words in use for the past seven hundred years, with their origin and history, and abundant quotations. Invaluable for the advanced student of language and literature. Not so well adapted as the other dictionaries for every-day use.

WEBSTER, *New International Dictionary of the English Language*. Merriam. Springfield, Mass., 1910. 2 vols. There have been various editions since the first in 1828. The present one embodies considerable new material and is worthy of special study. The explanations of the words have been enlarged and more attention has been put on the treatment of synonyms. The student should make sure that he understands the common abbreviations used in dictionaries: *n.*, *v.*, *a.*, *adv.*, *i.*, *t.*, *pl.*, *p.p.*, *p.pr.*, *imp.*, *cf.*, *obs.*, *F.*, *OF.*, *L.*, etc. The most usual marks of pronunciation should be studied, as *ā*, *ă*, *â*, *î*, *ï*.

Read, as an instance of the treatment, what is said of *ablaze*, *-able*, and *able*. Compare the treatment of synonyms under *able* with those for the same word in Crabb and Roget.

THE CENTURY DICTIONARY. New York, 1889-91. The Century Co. Supplement, New Vols. I and II, 1909.

The Century is comprehensive rather than critical, a dictionary of the growing language. Compare with Webster the treatment of *ablaze*, *-able*, *able*. Note especially the difference in the kind and length of explanation and in the treatment of synonyms. The Supplement adds 120,000 words and phrases, especially in science, the arts, and the common vocabulary. Test this by looking up any recent word, as *disassemble*, in the New International, the Century, and the Century New Volumes.

## B. SPECIAL DICTIONARIES

COMMON DICTIONARY APPENDIXES. The appendixes at the back of large dictionaries, as for instance Webster's, may be used for a variety of ordinary matters. The list is usually somewhat as follows:

A dictionary of noted names of fiction.

A biographical dictionary, with pronunciation.

A list of English Christian names.

A gazetteer of the world, with pronunciation.

A list of Scripture proper names.

A list of Greek and Latin proper names.

Foreign quotations and phrases.

Abbreviations, and signs used in writing and printing.

Only words in the most common use are likely to be found in such lists.

CENTURY CYCLOPEDIA OF NAMES. New York, 1894. The Century Co.

Names relating to geography, biography, mythology, history, ethics, art, and fiction. Pronunciation given. For special information, the student will usually save time by consulting this book first. The articles are concise. The subjects best covered are in geography and biography, which latter includes persons still living.

TECHNOLOGICAL AND SCIENTIFIC DICTIONARY. Goodchild and Tweeney. Philadelphia, 1906. Lippincott.

Subjects relating to the sciences, arts, manufactures, and trades. Brief treatment. English authorities.

DICTIONARY OF PHRASE AND FABLE. Brewer. London, 1896. Cassell.

The derivation, source, or origin of common phrases, allusions, and words of special meaning. There is a multitude of special dictionaries containing "facts for the curious," in various departments of knowledge. As they are of small consequence to the beginner, they are not included here.

FAMILIAR QUOTATIONS. Bartlett, J. Boston, 1892. Little, Brown and Co.

Quotations from poetry and prose, in both ancient and modern literature. Arranged chronologically, but with an index of authors, and another of important words.

CYCLOPÆDIA OF PRACTICAL QUOTATIONS. Hoyt, J. K. New York, 1896. Funk and Wagnalls.

Quotations in English, Latin, and modern foreign languages. Arranged under subjects, except those from the Bible. Topical index, and cross-references to allied subjects.

A BOOK OF QUOTATIONS, PROVERBS, AND HOUSEHOLD WORDS. Benham, W. G. Philadelphia, 1907. Lippincott.

The English quotations are arranged under authors. Index of authors, and ample verbal index of important words.

ENGLISH SYNONYMS. Crabb, G. New York, 1892. Harpers.

In alphabetical arrangement. The use of words is illustrated from the best authors.

THESAURUS OF ENGLISH WORDS AND PHRASES. Roget, P. M. New York, 1886, Crowell; Longmans. Boston, De Wolfe.

A recently enlarged edition. The object of the book is to furnish expression when the thought is already in mind in a general form. Classified under abstract relations, as space, matter, intellect, etc. The alphabetical index makes it possible to use the book for synonyms. Valuable for advanced students of composition.

## C. BIOGRAPHY AND AUTHORSHIP

THE DICTIONARY OF NATIONAL BIOGRAPHY. Leslie Stephen and Sidney Lee. London, 1885-1900. Smith. 63 vols. Supplement to 1901, 3 vols.

The most important and comprehensive work of its kind. No living persons.

LIPPINCOTT'S BIOGRAPHICAL DICTIONARY. Philadelphia, 1901.

To end of nineteenth century. Sketches of lives, with biographical references. An interesting introduction gives the general principles of pronunciation in the important languages of Europe and Asia.

THE NATIONAL CYCLOPEDIA OF AMERICAN BIOGRAPHY. New York, 1892-1901. White.

Devoted mainly to contemporaries. Especially valuable for less well-known Americans.

**A CRITICAL DICTIONARY OF ENGLISH LITERATURE AND BIOGRAPHY, AND AMERICAN AUTHORS, LIVING AND DECEASED.** Allibone, S. A. Philadelphia. Lippincott.

To 1888. Biographical material of authors, lists of works, and critical notes from authors and reviews.

**DICTIONARY OF ENGLISH LITERATURE.** Adams, W. D. New York, 1884. Cassell.

A list of prominent authors, their dates, the dates and titles of their works, and critical extracts. Together with this are pen-names, important quotations, proverbs, the names of characters, and sometimes the first lines of poems.

**GUIDE TO THE STUDY OF NINETEENTH CENTURY AUTHORS.** Hodgkins, L. M. Boston, 1891. Heath.

A list of twenty-six English and American authors, with references to literature on each.

**WHO'S THE AUTHOR?** Peet, L. H. New York, 1901. Crowell.

A brief account of novels, stories, speeches, songs, and general writing in America.

**WHO'S WHO?** London. Annual. Macmillan.

For living celebrities. Brief notices. Some Americans.

**WHO'S WHO IN AMERICA.** Biennial. Chicago. Marquis.

#### D. ENCYCLOPÆDIAS

**ENCYCLOPÆDIA BRITANNICA.** Philadelphia, 1875-90. Stoddart. In this edition the number of articles on America was increased.

Cambridge, England, 1910. The University Press. 11th edition. 28 vols. and Index.

The standard work of reference. Indexed under general subjects, except that in the latest edition articles have in some cases been subdivided. Bibliographies. The index gives cross-references.

Compare the treatment of the following list of representative topics with that in Americana:

Abbey, A. E.; Abbotsford; Abington, Mass.; Absolute; Absolute, Sir Anthony; Abbott, Lyman; Accident Insurance; Acetylene.

See *Aeronautics* in the index. Examine some of the cross-references and compare the treatment of this topic with that in the New International Encyclopædia.

THE NEW INTERNATIONAL ENCYCLOPÆDIA. New York, 1894. Dodd. 17 vols.

The exercises suggested are, for convenience, all confined to Vol. XIV. Examine the map of the Philippine Islands, p. 20. Is it apparently complete? What does it show of transportation? elevations? Look over the article on the Philippines, especially Ethnology, Customs, and History, pp. 29, 30. Is the bibliography apparently extensive? recent, considering the date of publication?

Other articles to be looked over for a comprehensive notion of the scope of the work: Philadelphia (What are the leading newspapers? What was the state of local politics at the date of publication?); Pin; Port Arthur; Positivism; Psychological Research.

ENCYCLOPEDIA AMERICANA. New York, 1904. Americana Company. 16 vols.

Under the auspices of the *Scientific American*. Many signed articles by important specialists. Distinctively American, but universal. Biographies of living men, brief notices of strange names, phrases, and allusions. Pronunciation indicated.

Note the extent of the article on Abbreviations and compare the list with that in Webster's New International Dictionary. See above for a list of topics to be looked over in comparison with the Britannica. Glance over the article on Aërial Locomotion. Are any authorities mentioned in this article or in those under cross-references?

## E. ANNUALS AND YEAR BOOKS

*(Exercises based on books published in 1911)*

**APPLETON'S ANNUAL CYCLOPÆDIA AND REGISTER OF IMPORTANT EVENTS.** New York, 1876-1902. (Discontinued.)

Intended as a summary of events for the year, arranged in logical form, under large headings. History, biography, and literature received especial attention.

What is meant by a cumulative index? Using the index to the last volume, see what can be learned of the history of some recent matters of interest: Prohibition in Maine; Conservation; Concrete construction. For the last topic, look under: Concrete, Bridges, Dams (note the heading "Egypt"), Reinforced concrete, Construction, Engineering, Building.

Using Vol. VII only, look up Education, Schools, Colleges, Harvard, and Massachusetts.

**THE NEW INTERNATIONAL YEAR BOOK.** New York. Dodd.

Similar in purpose to Appleton's, but arranged under detailed headings. Articles revised each year. Best articles are those on biography, current history, and politics. Alphabetical index, with list of titles in volumes for the preceding years. Cross-references.

Attempt to look up at least one of the following topics, or, better, some similar recent topic in which you are interested. Use also the list of titles for 1907-09. Note whether there are any references to authorities.

(a) The events in Maine leading to the vote on prohibition in 1911. (Try Prohibition, Plaisted (governor), Sturgis law, Constitutional amendments, Maine.)

(b) The Ballinger-Pinchot affair.

(c) Insurgency in the Republican party.

(d) Concrete construction.

(e) The initiative, the referendum, and the recall.

**THE AMERICAN YEAR BOOK.** New York, 1911. Appleton.

The current volume is the first of a proposed series, covering comparative and national statistics, history, law, govern-

ment, economic and social questions, industries, science and engineering, art, literature, and education. Some bibliographical references. A list of important events in America, and, separately, in foreign countries.

Look for mention of your own college under headings where it should occur. Referring to previous studies with other reference books, look up: Concrete, Aeronautics, Conservation. Examine, in connection with the article in the New International Encyclopædia, the article on the Philippine Islands.

**THE STATESMAN'S YEAR BOOK.** London. Macmillan.

Astronomical, official, and other information relating to the British Isles, the Colonies, and other countries. Contains a useful, though brief, chronicle of the year through September. Societies, clubs, sporting activities, etc.

Look up: Land tax, Income tax. What position in the English nobility is occupied by Lord Lansdowne, Lord Kitchener, Lord Roberts? What were the dates of important proceedings in the House of Commons (1910) relative to the dispute over the veto power of the House of Lords? In what way would these dates be chiefly valuable in looking up the history of the dispute?

**TRIBUNE ALMANAC AND REGISTER.** New York Tribune.

Facts about the United States: election returns, statistics, laws, etc.

**WORLD ALMANAC.** New York World.

Chiefly statistics. A book much used in all practical literary work. A general index, and an index of important articles in preceding volumes.

Look up: Conservation, Concrete construction, Engineering, Custom house, examination of baggage. Who holds the record in pole-vaulting for distance? What is it?

**STATISTICAL ABSTRACT OF THE UNITED STATES.** United States Bureau of Statistics.

Deals with population, finance, commerce, products, immigration, and education. Sometimes comparative tables for preceding years.



## F. HISTORICAL SUMMARIES

**HARPER'S BOOK OF FACTS.** New York, 1895. **Harpers.**

A classified history of the world, embracing science, literature, and art. Useful, concise chronological outlines.

**DICTIONARY OF DATES,** and universal information relative to all ages and nations. Hayden. New York, 1898. **Putnam.**

Arranged alphabetically, under event, place, etc. A full account to the fall of 1898.

**TIME TABLE OF MODERN HISTORY, 400-1870.** Morrison, M. Westminster, 1901. **Constable.**

Parallel tables of the history of various countries. A general chart of history, and historical maps. Index.

**TABLES OF EUROPEAN AND AMERICAN HISTORY, LITERATURE, SCIENCE, AND ART, 200-1888.** Nichol, J. New York, 1888. **Macmillan.**

Arranged by periods, chronologically.

**ANNALS OF POLITICS AND CULTURE, 1492-1899.** Gooch, G. P. Cambridge, England, 1901. **Cambridge, University Press.**

Chronological, with a general index and references to other works.

## G. LISTS OF PUBLICATIONS

No definite exercises can well be suggested for the use of the finding lists in a library. Each student should choose two or three subjects in which he is interested and follow them through all such lists, confining his attention in the magazine lists to things published during the last year. An exact transcription of the entries into a note-book is important. The student should be sure that he understands all abbreviations. No such work can be of much value unless the articles referred to are actually consulted, for acquaintance with the periodicals and knowledge of the kind of material they usually furnish is important. With the book lists, little more will be possible usually than to know their place on the shelves and to study their abbreviations and methods of arrangement.

POOLE'S INDEX TO PERIODICAL LITERATURE. 1802-81. Supplements, 1882-1901.

Such general periodicals in the English language as are likely to be found in libraries. Arranged under subjects, with reference to volume and page.

READER'S GUIDE TO PERIODICAL LITERATURE. 1900-1904; 1905-1909. Monthly, cumulated in yearly volumes. About ninety periodicals. A current events index. Cross-references on important articles.

AMERICAN LITERARY INDEX. Fletcher and Bowker. 1892-1904. Continued as:

AMERICAN LIBRARY INDEX. Fletcher and Haines.

About 137 English and American periodicals, indexed under subjects, with general author index. Each volume includes an annual index to parts of books, essays, etc., an index to dates of the year which may serve as a newspaper finding list, and a list of special bibliographies. The Annual Library Index is under author, title, and subject in one list.

PUBLISHERS' WEEKLY. American book-trade journal. Books published in America, full titles, descriptive notes. Weekly record, arranged alphabetically, under authors. Lists of the more prominent new English books. Monthly cumulated lists under author, title, and subject, with reference to the original notice. Cumulated yearly.

THE AMERICAN CATALOGUE OF BOOKS. 1876-1900.

THE UNITED STATES CATALOGUE OF BOOKS IN PRINT IN 1899.

ANNUAL AMERICAN CATALOGUE. 1886-1901. New York. Publishers' Weekly.

Indexed by authors, and title and subject. Descriptive notes.

ANNUAL AMERICAN CATALOGUE. Since 1901 appears as cumulated volume of Publishers' Weekly, referred to above.

